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Gas Journal

Vol. 267. - 103rd Year. LONDON, SEPTEMBER 12, 1951. No. 4606. Price 1/-

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THE NEW ASCOT
709 MULTIPOINT

LESS MAINTENANCE : LONGER SERVICE LIFE

IMPROVED EFFICIENCY

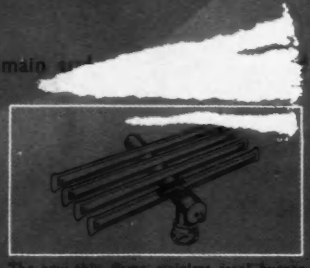
★ A technically improved successor to the famous NEA 32/6.

★ Built-in gas governor.

★ Completely new thin flame stainless steel burner practically eliminates corrosion — less maintenance.

★ Wider fin spacing on new heat exchanger makes wider flue-ways — less maintenance.

★ Single rotary gas cock for both main and pilot operation, improved appearance.



The new thin flame stainless steel burner is exclusive to Ascot water heaters

Ascot makes the most of gas

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ASCOT GAS WATER HEATERS LTD · 43 PARK ST · LONDON W1 · GROSVENOR 4491

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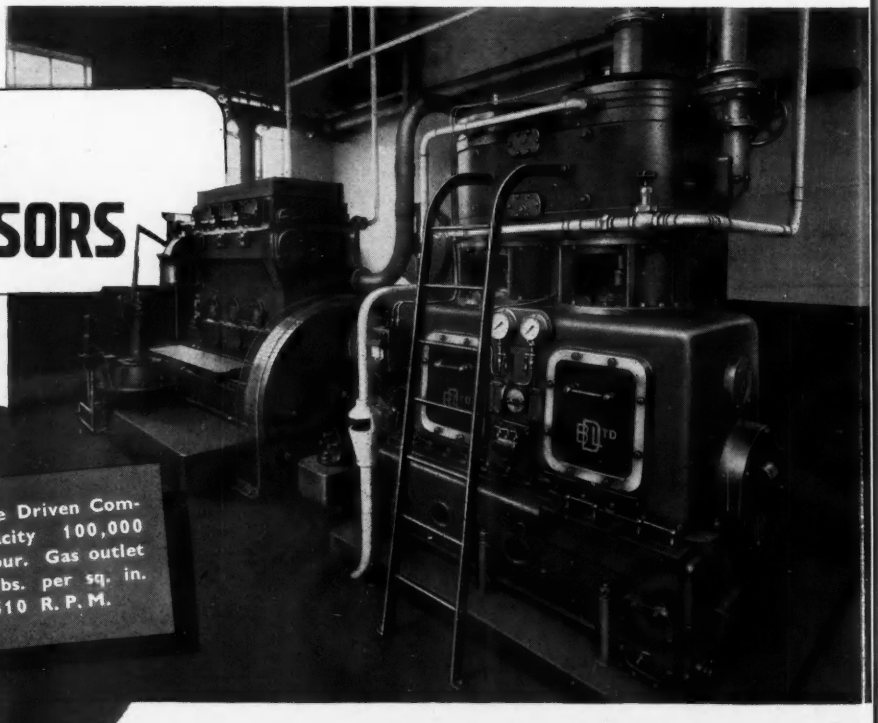

Gas-Oil Engine Driven Compressor, capacity 100,000 Cub. ft. per hour. Gas outlet pressure 15 lbs. per sq. in. Running at 510 R.P.M.

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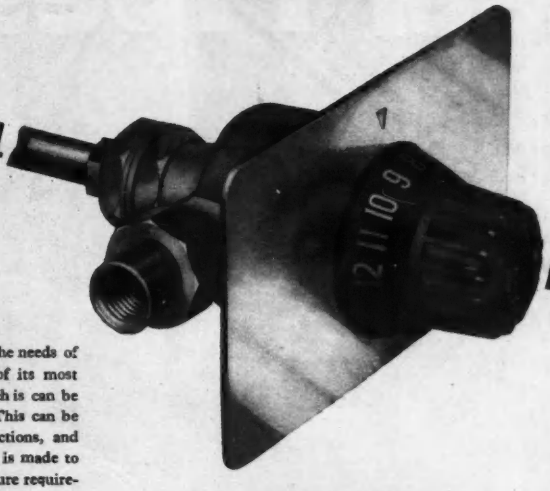

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This Thermostat is designed to meet the needs of modern cooker construction. One of its most important features is the ease with which is can be dismounted for cleaning purposes. This can be done without breaking the gas connections, and without upsetting the calibration. It is made to conform to the latest B.S.1250 temperature requirements. A modified version of this thermostat is available for Baker's Ovens. *For further information please apply for Pamphlet G.265.*

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Dependable Year in Year out
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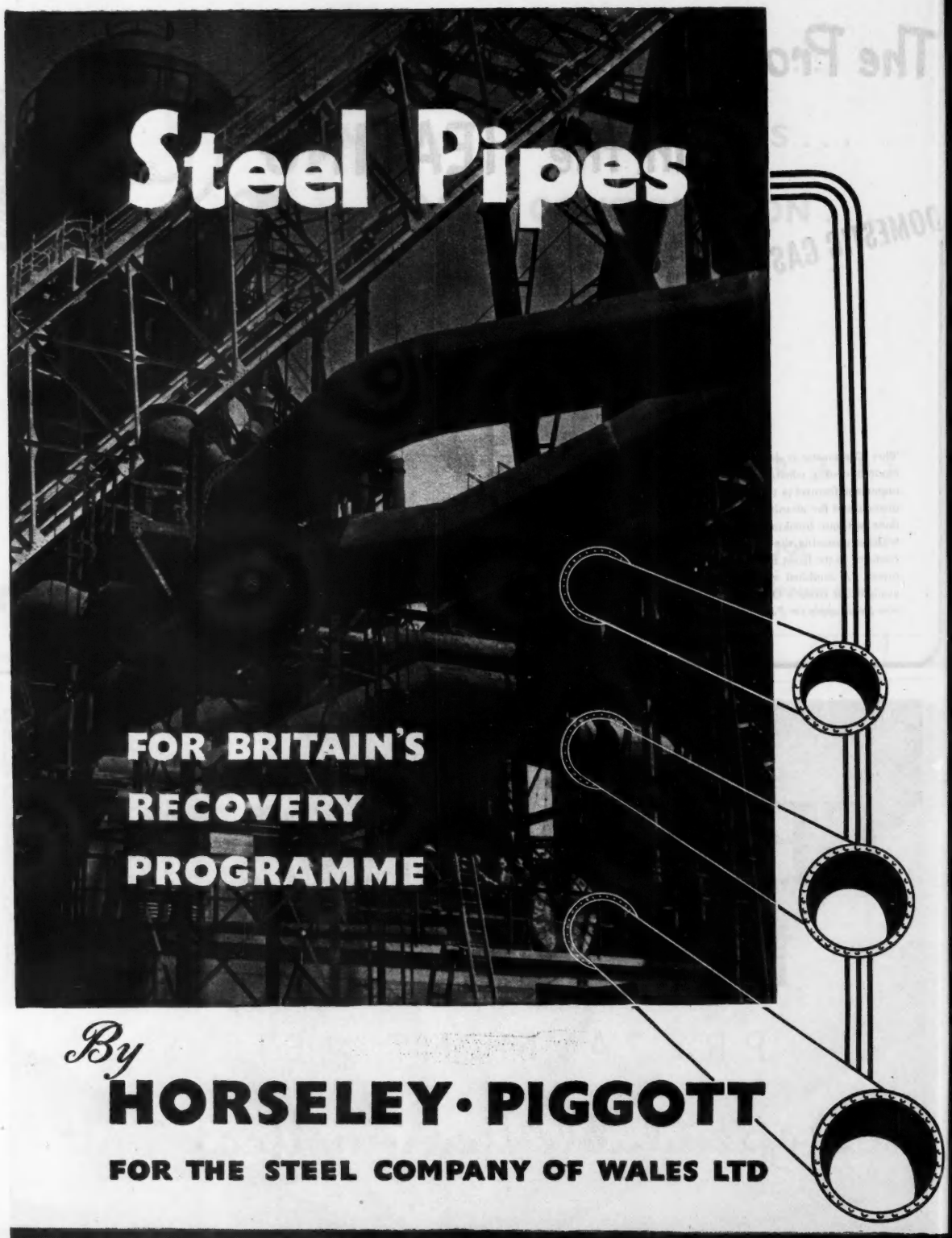

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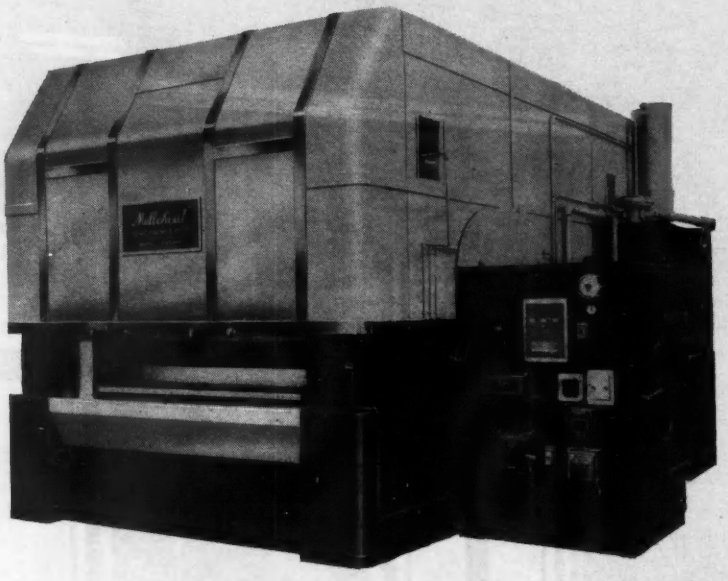
THE "MELLOHEAT" SWING TRAY TRAVELLING OVEN

For Bakery Work



Points to note in the COLLINS "Melloheat" Swing Tray Oven:

Gas or oil fired

Balanced heating

Variable speed of baking time

Automatic flame failure control

Thermostatically controlled temperature

3—4 or 6—7 Sacks per hour.

It is an oven of distinction built for the progressive firm.

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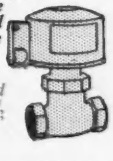

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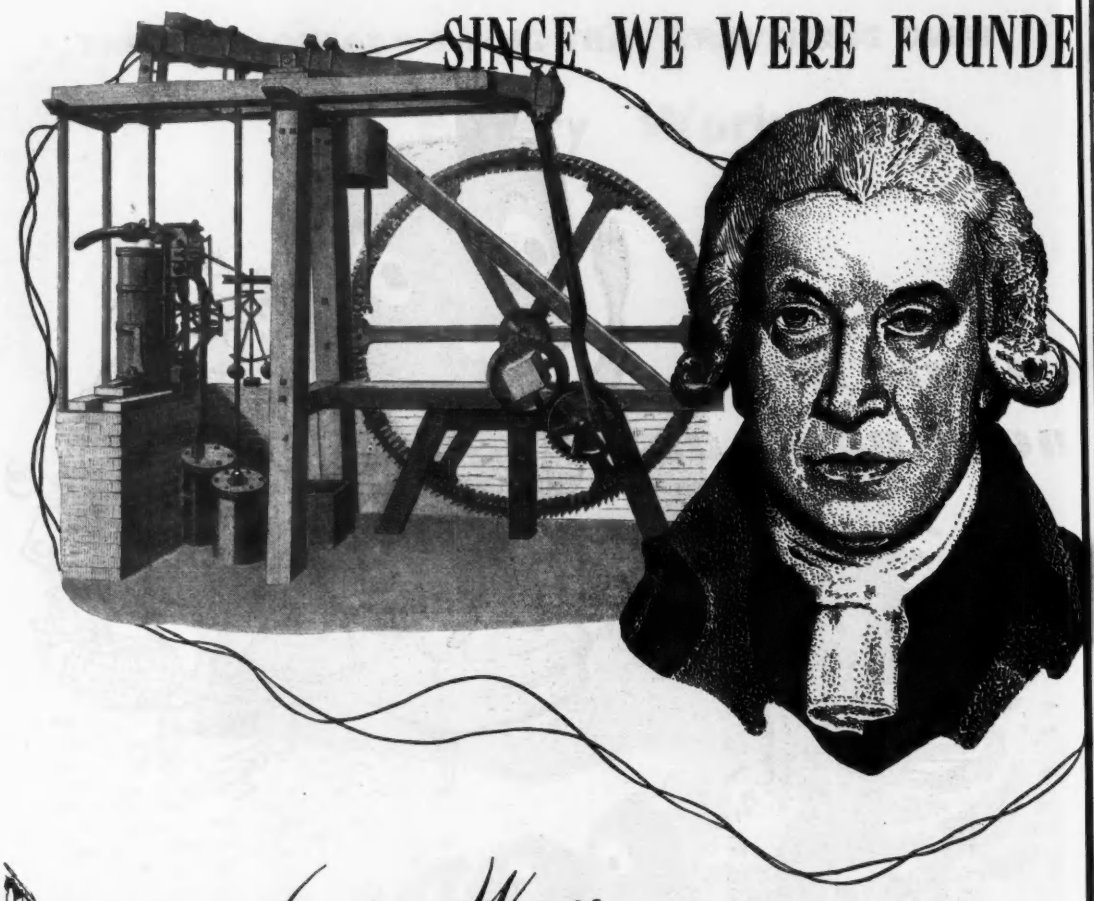

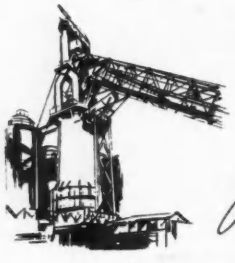

James Watt

The applications of James Watt's famous invention of the condensing st engine were beginning to give great stimulus to Britain's engineering indu late in the eighteenth century.

About this time Newton Chambers were becoming well known for their Foun and Engineering skill. Orders for many parts for steam engines and railw were being executed, and thriving connections established over 157 years ago exist today.

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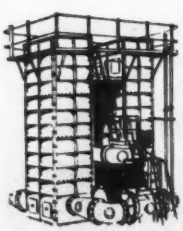

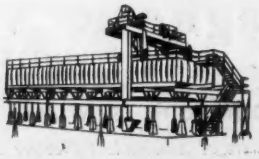

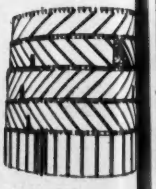

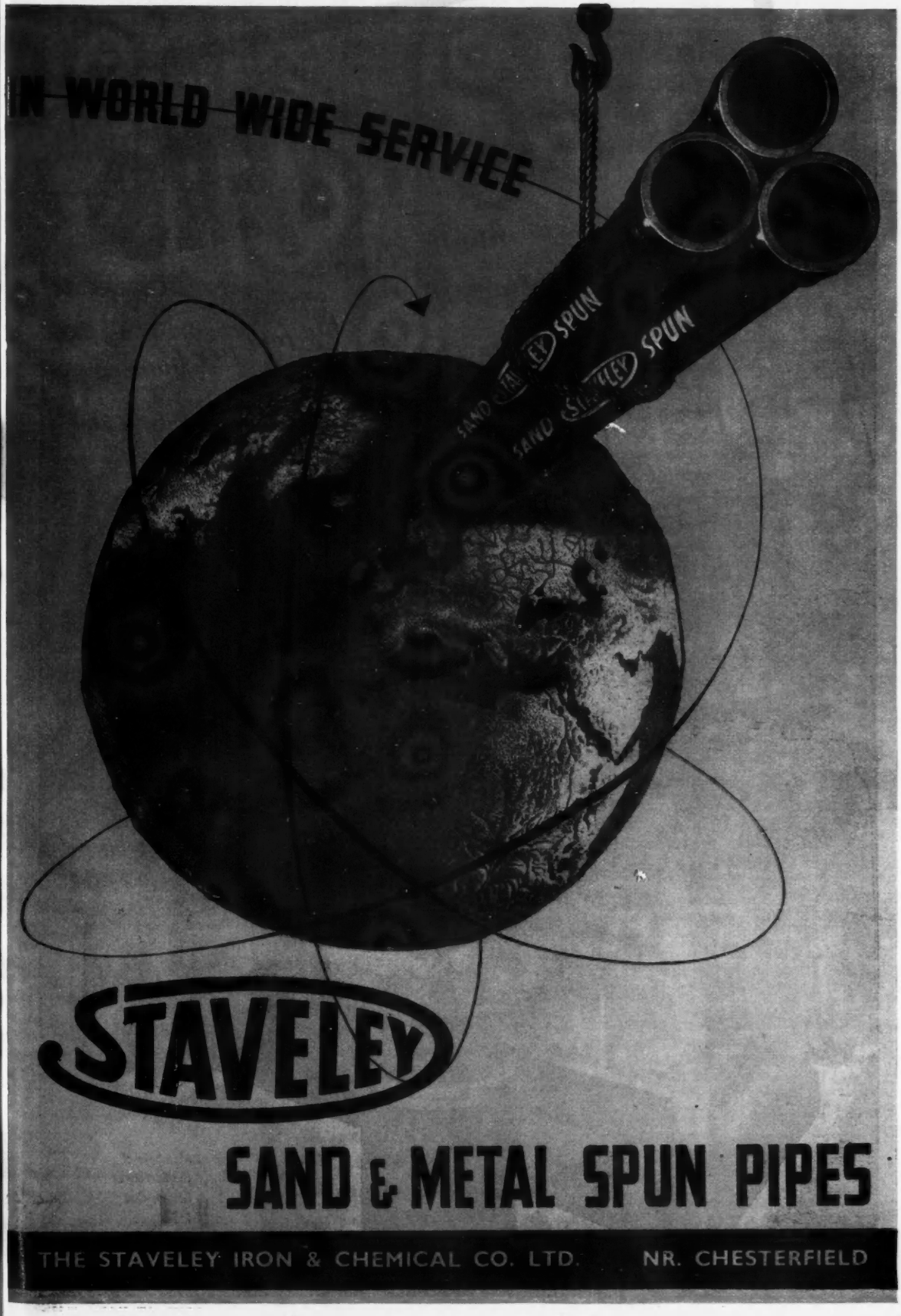
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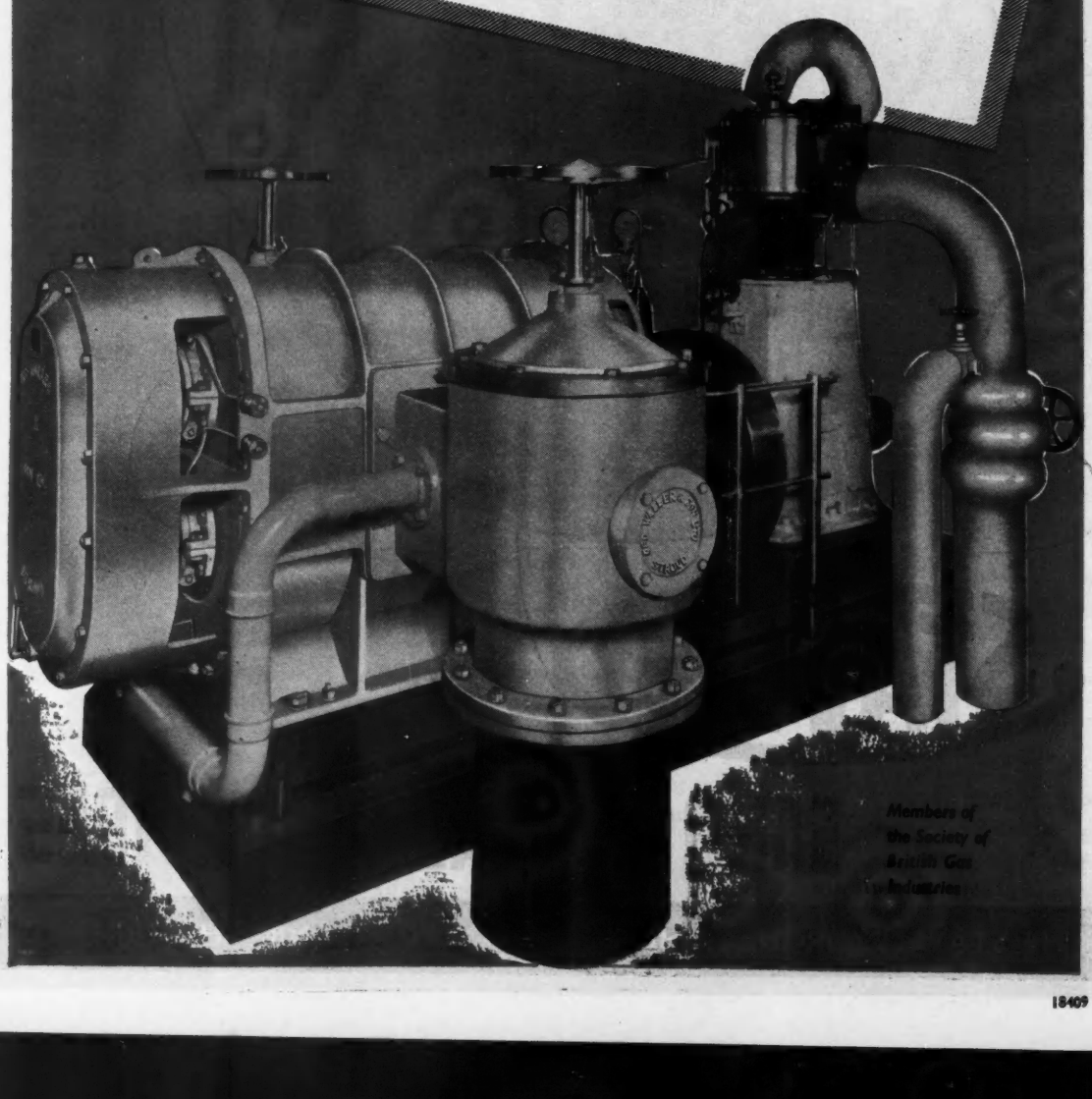

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SALESMEN KNOW what the public want in domestic gas equipment; and salesmen are among the most enthusiastic admirers of the Raymond gas cooker. They know the appeal of the beauty of the Raymond, styled by the famous industrial designer, Raymond Loewy; they appreciate its superb performance, due to adroit and inspired technical designing. Selling at 60 guineas, this most automatic, most labour-saving, most beautiful gas cooker is indeed for the few. But it is no wonder that all admire it—engineers, the press, cookery experts, housewives . . .

The Raymond is a product of

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Proprietors: Allied Ironfounders Ltd.

Festival of Britain authorities have chosen the Raymond as an outstanding example of contemporary British invention, craftsmanship and design.

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- ★ Stands *flush* against the wall
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Guarantee figures achieved on these three

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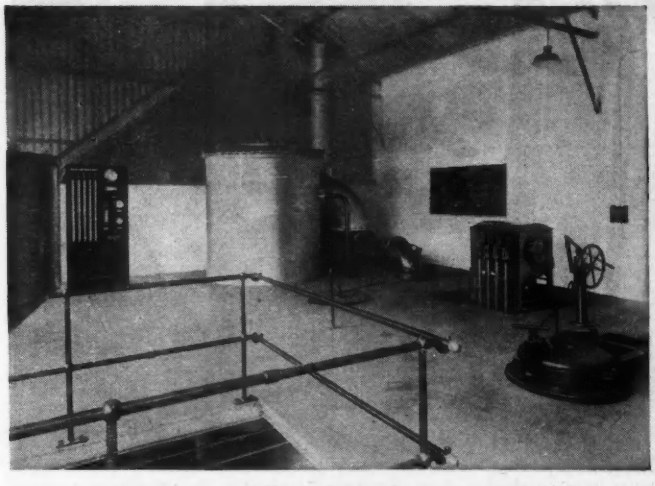
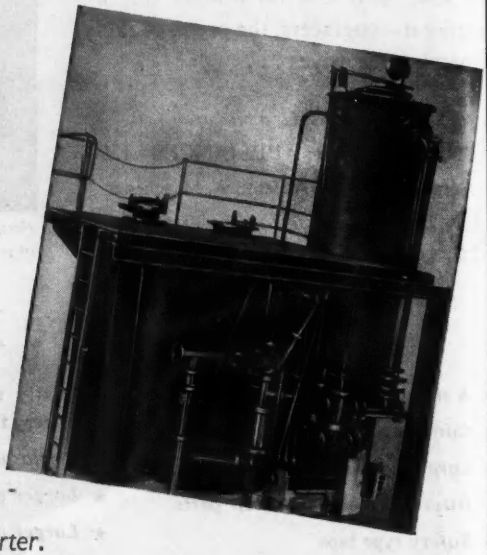
1,000,000 Cu. Ft. PER DAY
The Dry Seal Rotary Grate of a plant at a chemical works in Swansea.

100,000 Cu. Ft. PER DAY
A small Carburetted Water Gas Plant ready for despatch to Stornoway.



750,000 Cu. Ft. PER DAY *View of operating platform for a Carburetted Water Gas Plant now in operation at Galashiels.*



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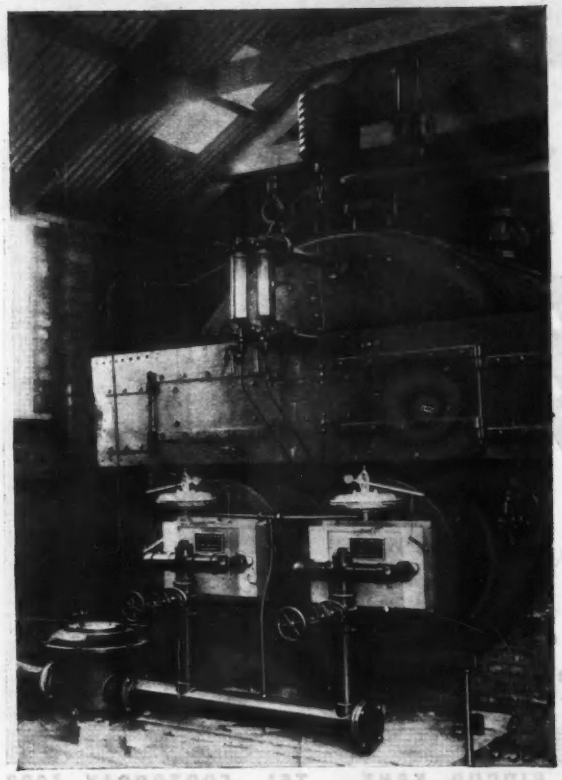

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Illustration shows application of our well-known Radiant Gas Burners to a large Marine Type Boiler used for generating steam for greenhouse heating and soil sterilisation in connection with large scale tomato growing.

OUR RANGE OF RADIANT BURNERS COVERS BOTH LARGE AND SMALL BOILERS FOR CENTRAL HEATING AND STEAM RAISING

Fully automatic control for pressure or temperature and also safety control

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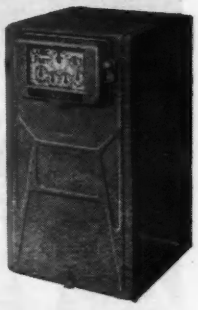
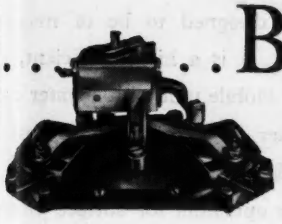


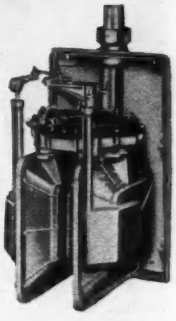
Die-cast light alloy construction machined to 2/1000ths.

. . . . Begwaco meters . .

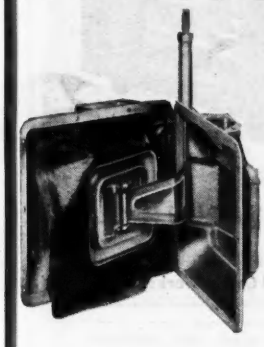


Valves of graphite-impregnated plastic, with stainless steel bearings and linkages of Monel

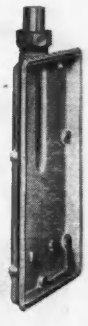
. . . . . one good point . . .



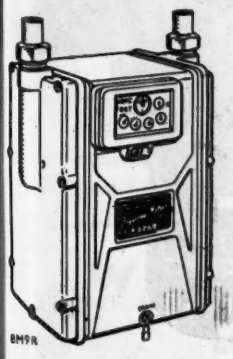
Constant volume diaphragm chambers — accuracy at all rates of flow.



. . leads to another . . . .



There is evidence of careful research in the Begwaco design. One good point leads to another. For instance, manufacture by pressure die-casting and automatic machinery — not by "tin and solder" — leads to a superior internal finish and reduces turbulence in gas flow. The design falls naturally into five basic sections, and hence dismantling and re-assembly can safely be entrusted to unskilled labour, reducing maintenance costs considerably. Low pressure absorption and almost frictionless movement are additional features. In fact, good design and the use of light alloys make Begwaco meters the best and sturdiest available.



BEGWACO METERS

Precision built in die-cast corrosion-resisting light alloy

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REMOVES DUST FROM ANYWHERE

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Model T.87 has been specially designed to be of maxim service in gas works. It is a highly efficient, l capacity, mobile unit with a water coo container for receiving hot dust a smouldering ashes. Can be used by to four operators for surface cleani

Designed specially for GAS WORKS

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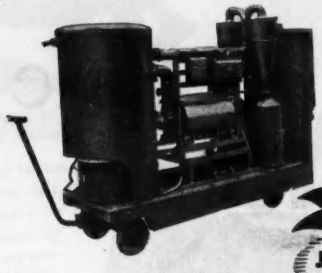

REMOVES HOT SOOT AND ASH

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"BRITISH VACUUM CLEANER"

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JEAVONS

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★ Designed for moderate gas loads—for larger capacities specify J.46.
★ Compensated against inlet pressure fluctuations.
★ Immediate delivery.

Details and samples on application.

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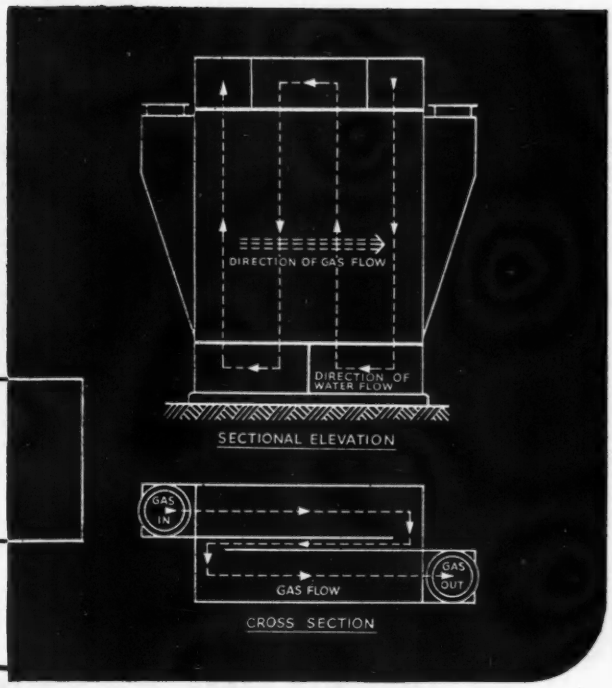
WHESSOE
VERTICAL WATER-TUBE HORIZONTAL GAS FLOW CONDENSERS

Horizontal tube condensers in which the gas flows at right angles to the tubes, have been largely superseded by vertical tube multipass condensers, in which the gas flows parallel to the tubes. Although horizontal tube condensers have a higher heat transfer coefficient they have the disadvantage that internal cleaning of the tubes necessitates breaking and rejointing of water pass covers, and that the tubes are liable to corrosion due to air released from the cooling water being trapped in pockets.

In *vertical* tube condensers internal cleaning of the tubes can be carried out during operation. Corrosion is minimised, as air released from the cooling water is automatically vented through the open tops of the tubes. Moreover, despite lower heat transfer coefficients, the simpler construction of vertical tube condensers results in lower costs for a given duty.

Whessoe *vertical tube horizontal gas flow* condensers combine the main advantages of both types. The gas flows at right angles to the tubes (as in horizontal tube condensers), thus securing a higher heat transfer coefficient, but the tubes are vertical, thus retaining the economical construction and ease of tube cleaning of vertical tube condensers.



Diagrammatic arrangement of a Whessoe vertical tube horizontal gas flow condenser.

Technical publications are available on request, including "Whessoe Condensing and Cooling Plant" just published.

WHESSOE LIMITED · DARLINGTON

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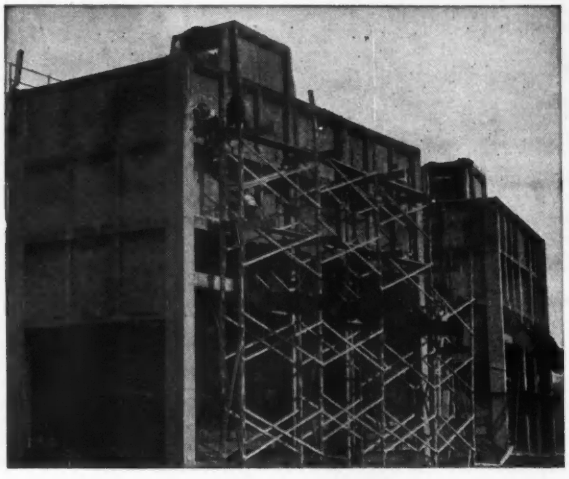
Gunite



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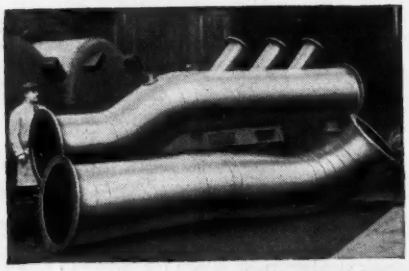

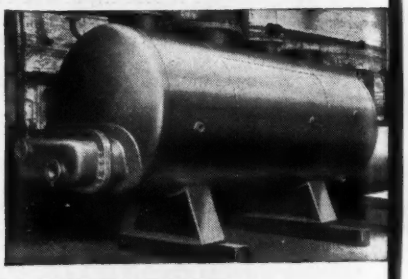

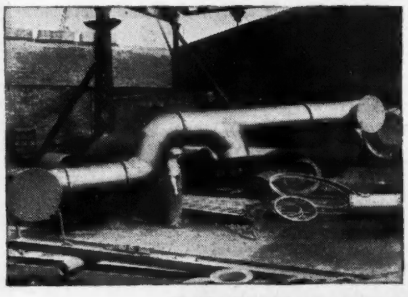

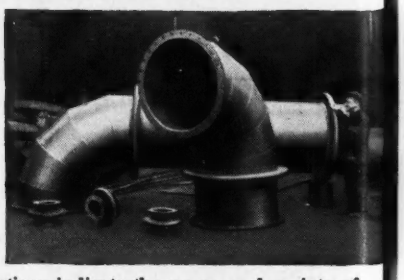

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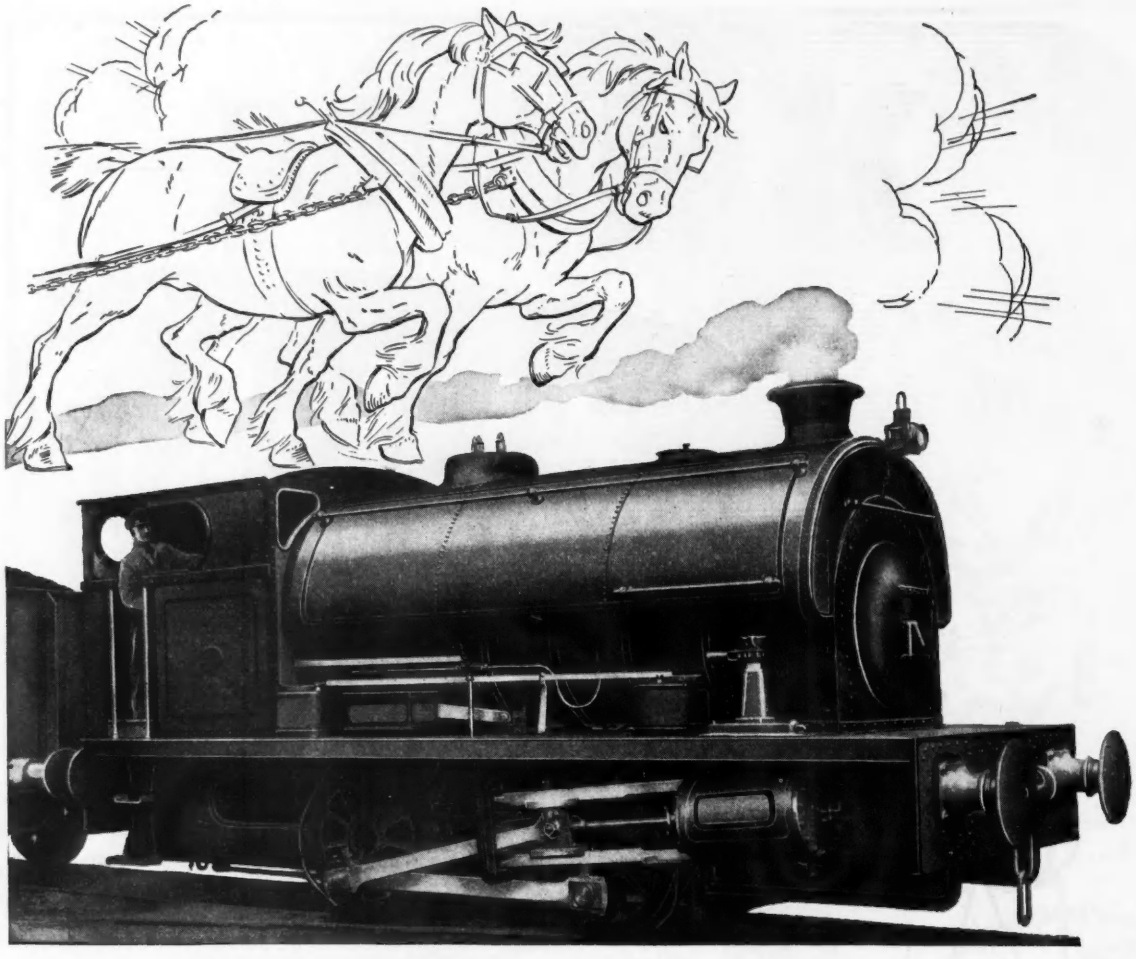

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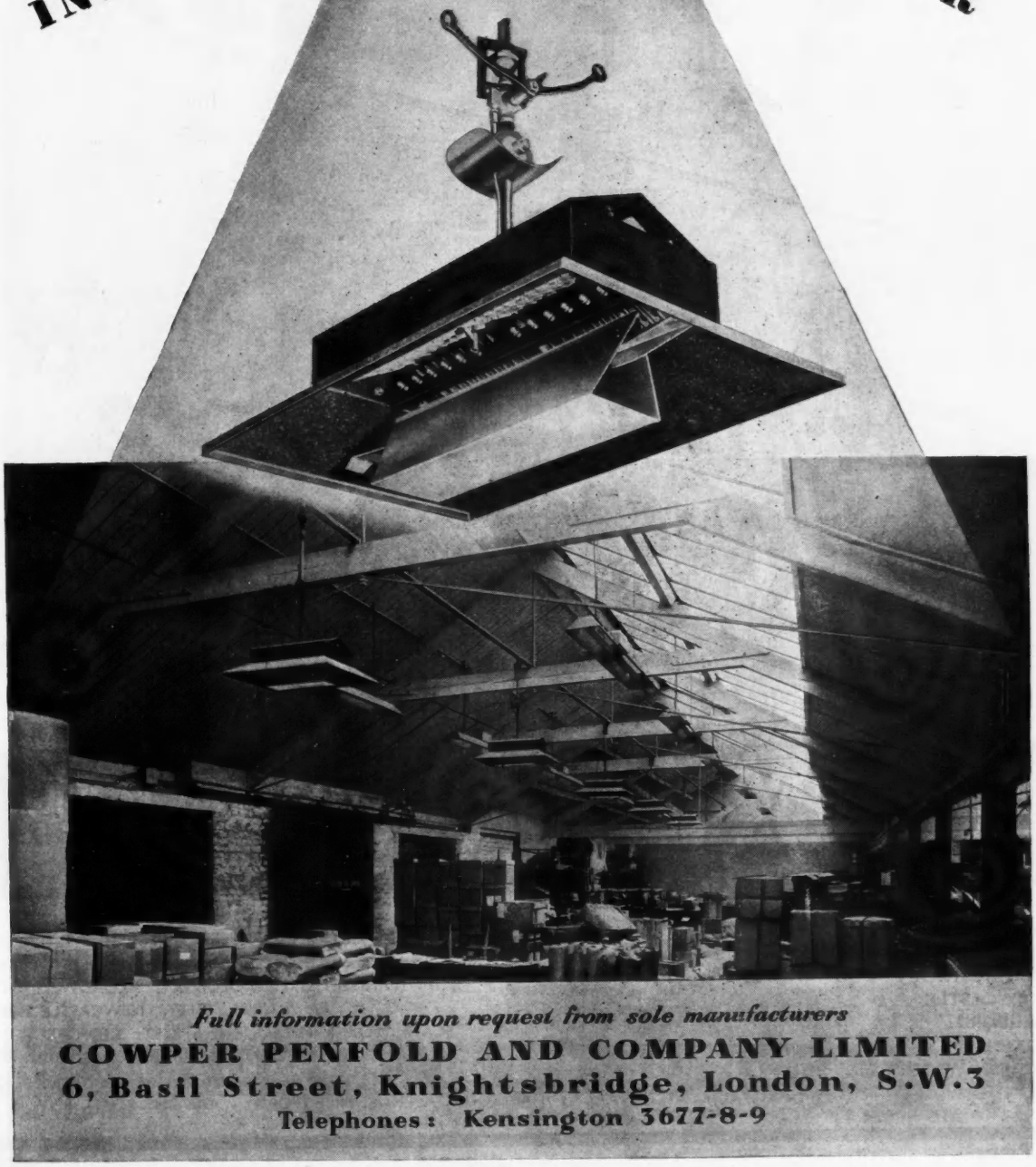

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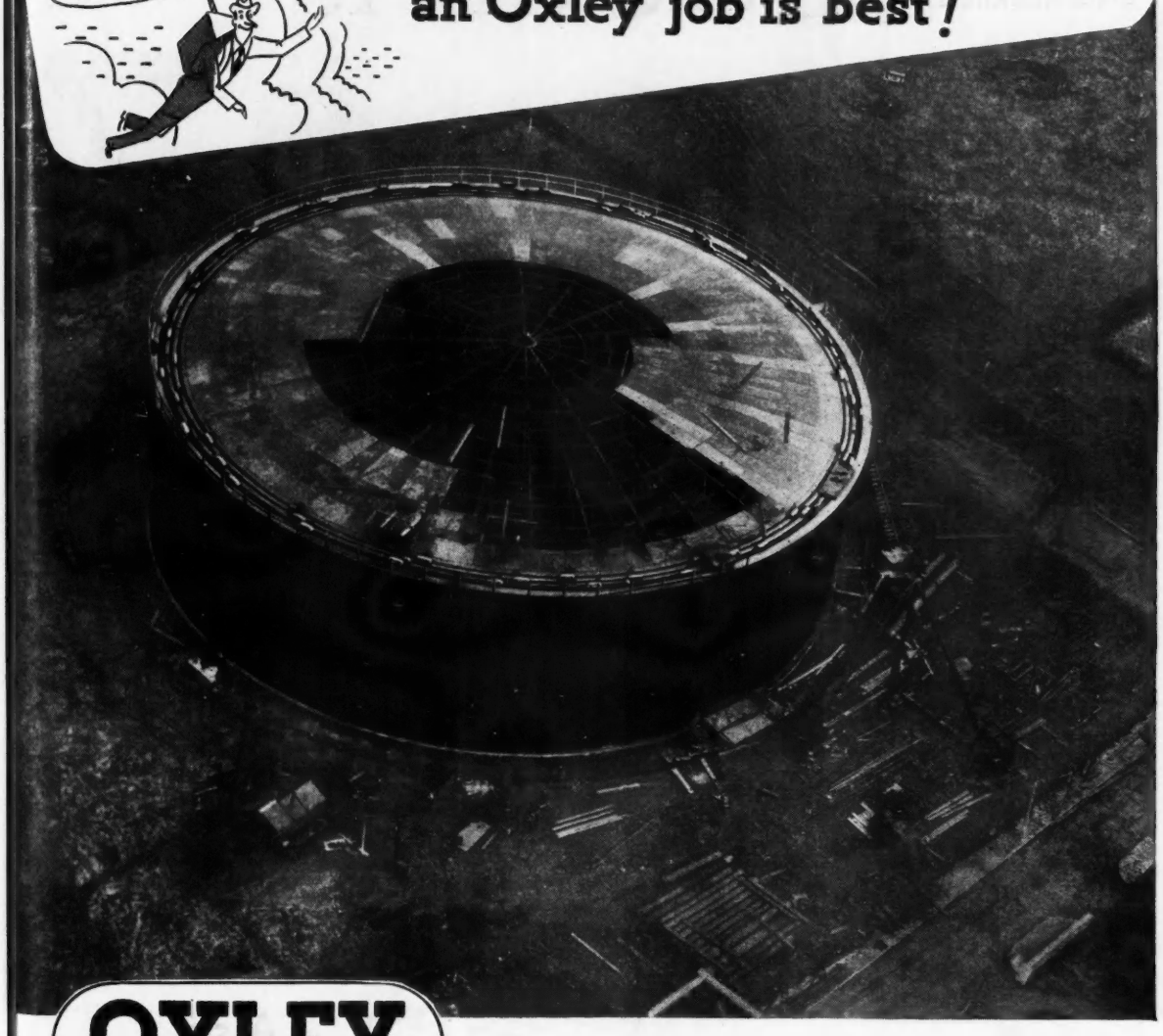

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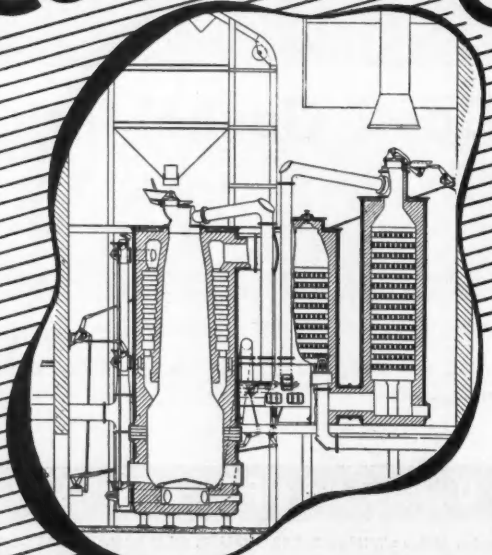

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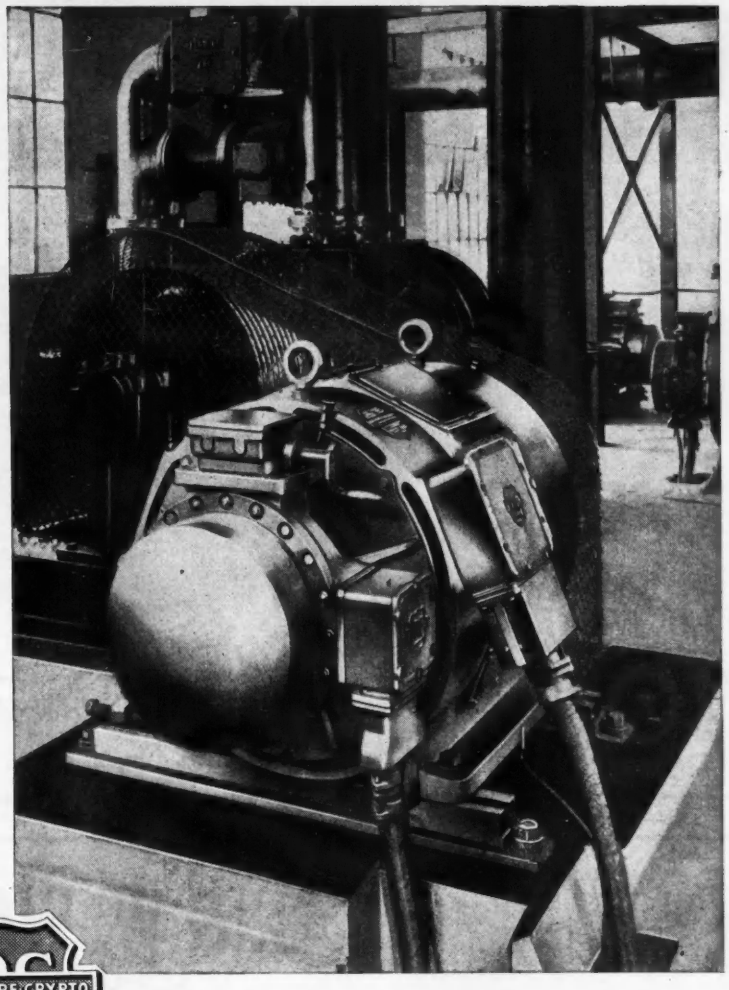

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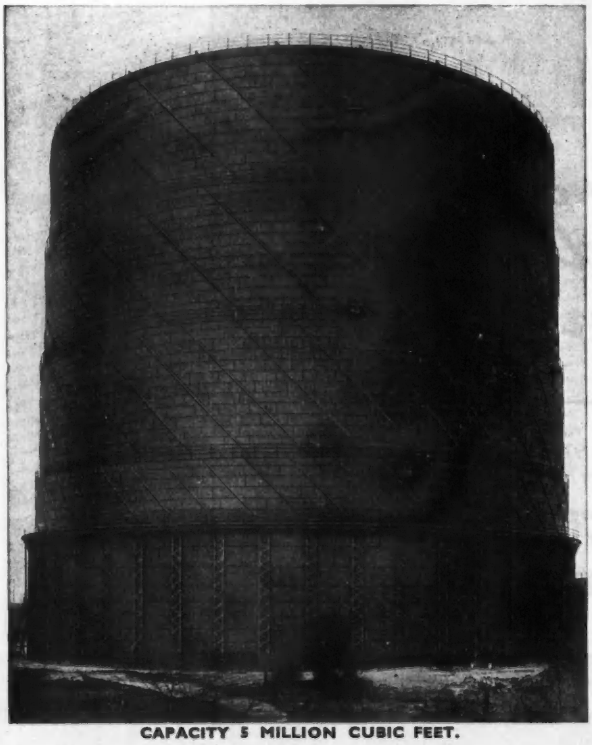

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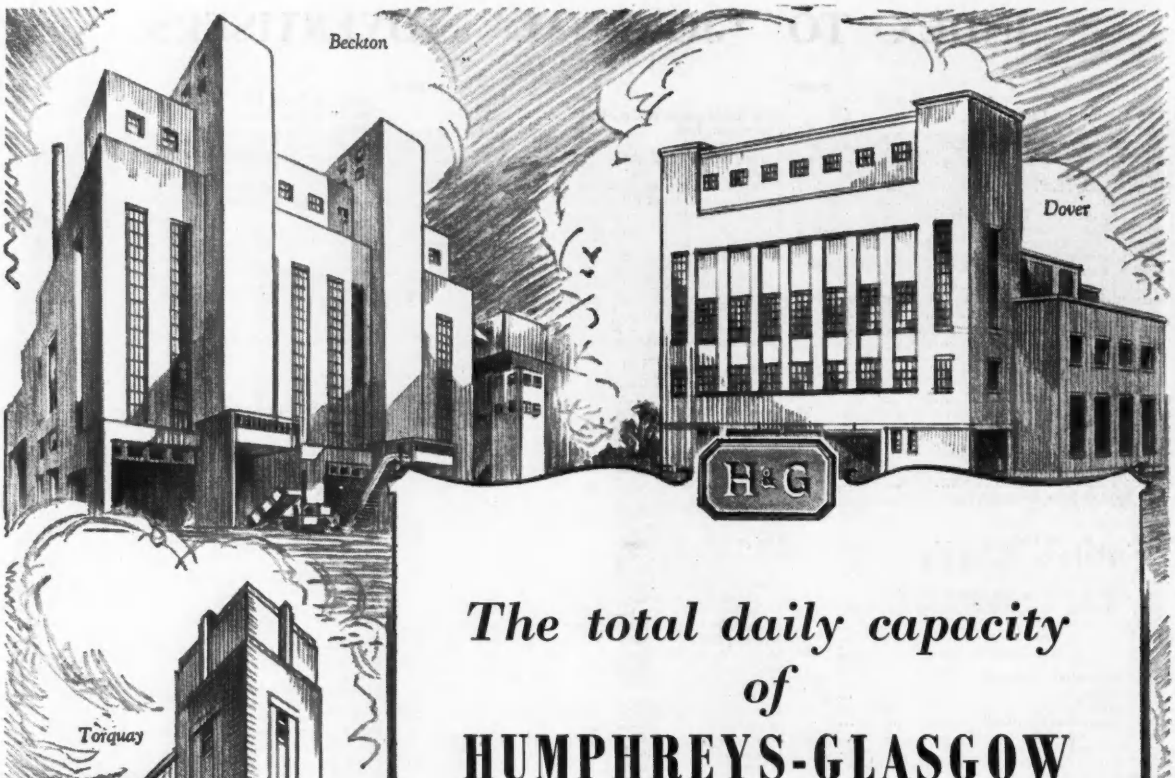

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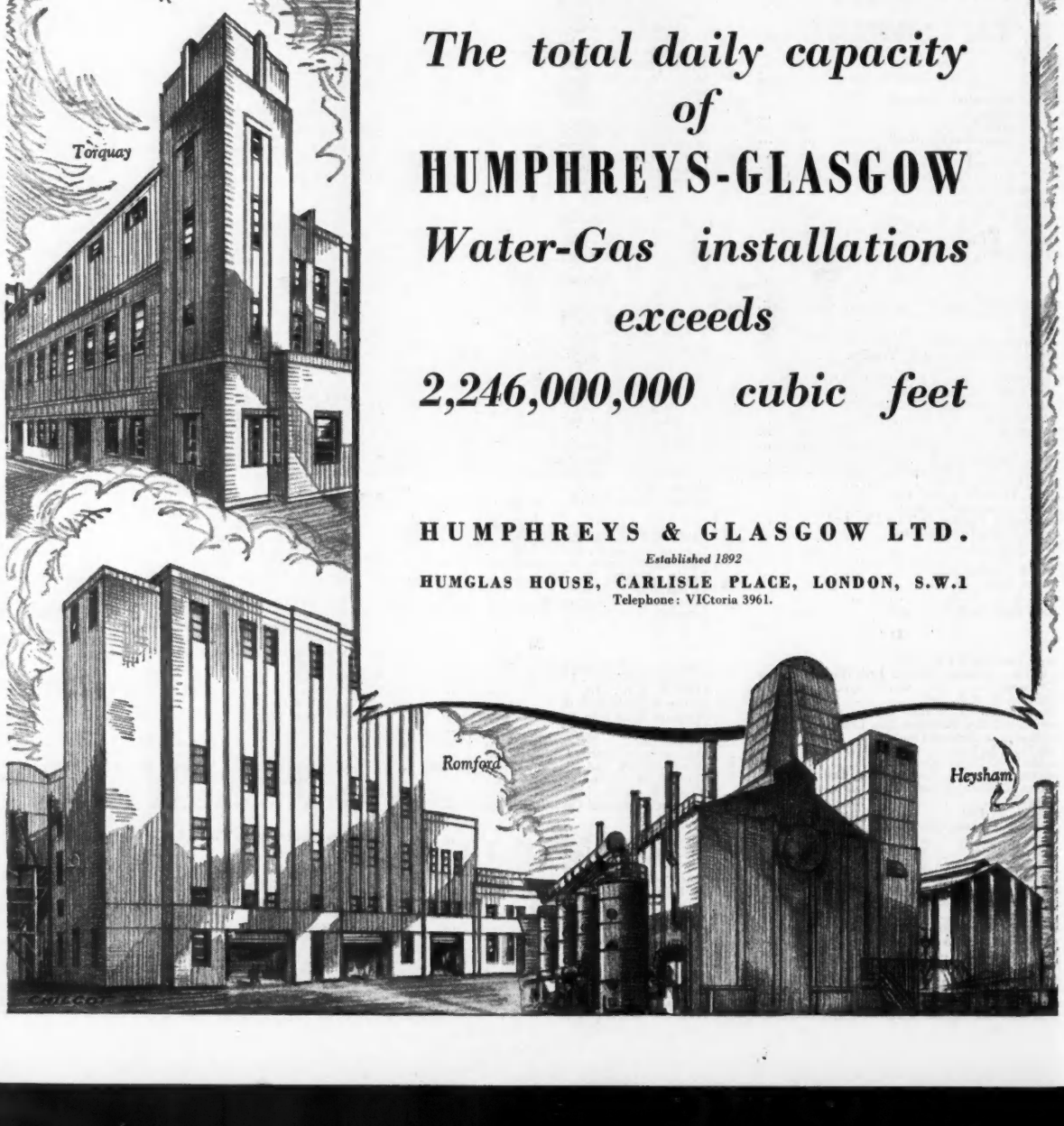

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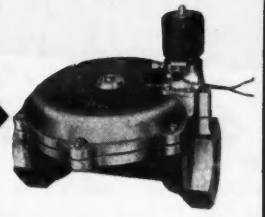

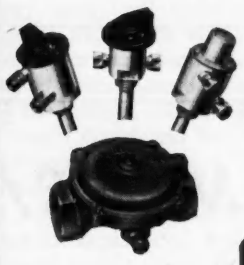

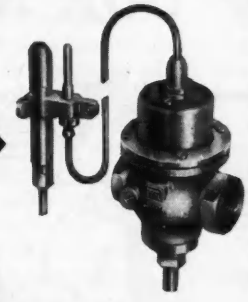

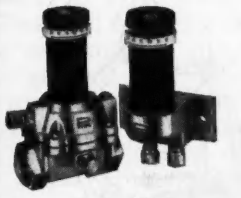

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Gas Journal

103rd YEAR OF PUBLICATION

EDITOR; NORMAN S. SMITH, B.Sc. (Gas Eng.)

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GAS JOURNAL

VOL. 267. No. 4606 103RD YEAR SEPTEMBER 12, 1951

FINANCIAL ASPECTS OF NATIONALISATION

FINANCIALLY the new organisation of the gas industry, especially in Scotland, affords some interesting contrasts with former municipal and company control of undertakings, and it was most appropriate that at the 90th annual general meeting of the North British Association of Gas Managers at Ayr last week—when members were themselves contemplating the changes that are involved in the conversion of the North British and Waverley Associations into the new Scottish Association of Gas Managers—Dr. James G. Davidson, Chief Financial Officer of the Scottish Gas Board, should present so comprehensive a review of the financial aspects and implications of nationalisation in Scotland as that which we reproduce on pp. 640-649 of today's *Journal*. Of the 194 undertakings for which the Scottish Gas Board became responsible on vesting date, 64 were formerly local authority undertakings, four statutory companies, two ancillary companies, four privately owned, and 120 non-statutory companies. In an area so widely scattered and ranging from the great municipal enterprises at Glasgow and Edinburgh to the small concerns in such outposts as Lerwick, Strathmiglo, and Old Meldrum (which according to latest returns make less than 20 mill. cu.ft. per annum between them), it was inevitable that the Board should find a very wide divergence of financial policy. Taking Great Britain as a whole, it was the necessity for establishing a standard form of accounts that delayed the publication of the first annual reports and accounts for nearly a year after the end of the initial accounting period and what was true as between the 12 area boards was even more pronounced as between the different undertakings in Scotland. Some kind of uniformity of system had to be achieved in a minimum of time, and it was good to learn from the paper that engineers and managers throughout the area had responded loyally to the call.

Criticisms were inevitable, mainly on two points: (1) that sufficient information was not made available to the man on the spot; and (2) that much of the meticulous detail required in the accounts was quite out of place when applied to the smaller works. For the first year the financial results were so belated that much of their value was of academic interest only, but it is the aim of the financial department in future to give divisional controllers and group managers quarterly, and even monthly, results. The second criticism has been closely examined with a view to the possible introduction of a simplified form of analysis of expenditure and income for undertakings under a certain size, but the suggestion was not favoured by the accounting staff. Engineers and managers who have been disposed to complain of too much form filling may find slight consolation in learning from Dr. Davidson that the details involved in their accounts are not in any way excessive compared with those required by other area boards which he has studied.

Of particular interest were Dr. Davidson's references to the budget and tariffs. It has become the practice for area boards to call for annual or half-yearly budgets from the undertakings under their control. These budgets, which take the form of an estimated revenue account, enable the level of charges made by each undertaking to be reviewed in the light of anticipated expenditure—a matter of special importance in a period of rising costs—and they enable a consolidated budget for the board as a whole to be prepared before the start of the financial year, so that the board may obtain an approximate picture of the year's trading. Despite temporary adjustments in charges the time-lag in recovering increased revenue in Scotland, as in some other areas, meant that a deficit on the first year's trading was unavoidable.

Complete national uniformity of charges for each class of consumer is neither practicable nor desirable, although the policy is to simplify the existing tariff structures by eliminating obsolete methods of charge and reducing the number of types of tariffs. Taking Great Britain as a whole there are a number of instances where the cost of supplying gas from small undertakings exceeds the price which consumers can reasonably be asked to pay. In such cases the price of gas will no doubt be subsidised by the more prosperous undertakings. So far as Scotland is concerned, Dr. Davidson confesses that questionnaires are no more popular with headquarters than they are with local officials, but he suggests that it would be helpful if some sample undertakings could, at their leisure (!), analyse their consumptions into suitable blocks so that tariffs could be determined with reference to relative demands. A realistic determination of what the prepayment differential should be seems also a matter which calls for factual study.

ENGINEERING AT OLYMPIA

ONLY the unpatriotic would choose to criticise the British Industries Fair which as a national shop window is unequalled throughout the world. But it must be confessed that the engineering section at Castle Bromwich is housed in a building so vast that it is not possible to generate that intimacy and atmosphere which is desirable in all events at which manufacturer and client mingle for their mutual benefit. In comparison with Castle Bromwich the mighty halls of Olympia are positively cosy, and we make no secret of the fact that for enjoyment, if for no other reason, we prefer Hammersmith. The fact that the Engineering, Marine, Welding, and Foundry Exhibition now covers a field which closely resembles that of the engineering section of the B.I.F. makes comparison (albeit odious) permissible. This remarkable show, which opened on August 30 and closes tomorrow, is now so large that it is unique of its kind, and it has the added advantage that, being biennial, definite progress is discernible in the various exhibits.

The 1951 exhibition, which is a useful adjunct to the Festival (although the opportunity for a definite link has been lost), occupies the entire floor space at Olympia, comprising 235,000 sq. ft., and is organised and signposted with the greatest efficiency. At a time when shortages of raw materials are producing no little anxiety, this is an achievement of which not only the organisers but British industry may well be proud. During the exhibition, 70 trade and technical associations are paying special visits, and these include the Institution of Gas Engineers, the London and Southern Junior Gas Association, and the Society of British Gas Industries.

There is indeed much to interest the gas man. Not only is there a considerable number of firms specialising in gas-burning equipment, but there is a far greater number whose products are used by the industry and whose developments are of the greatest interest and importance to us. As in former years, the *Journal* is reviewing the exhibition in some detail, but this year the increased number of firms dealt with indicates the widening scope of the show as a whole and its significance to the industry. In view of this expansion and the necessity for keeping gas well in the picture, it is perhaps pertinent to wonder why the Gas Council is not more strongly represented. As at previous Engineering and Marine shows the gas industry is confined to an information bureau which, although adequate enough of its kind, is hardly comparable with the impressive display which graced the B.I.F. this year. Surely this modesty cannot be due to the recent ban on promotional publicity, for a gas stand of this nature would inevitably emphasise prestige rather than sales? In fairness though it must be added that the British Electrical Development Association is not represented at all, so that to this extent, gas is to the fore.

TAX BURDEN

CHANGES in the income tax structure are urged by the Federation of British Industries in a memorandum to the Royal Commission on Taxation of Profits and Income. A further memorandum is to be submitted to the Commission later in the year. Beyond a certain point, it is stated, heavy taxation to cut down consumption becomes self-destructive if it discourages production, and it is probable that this point has been reached or passed in Britain today. Because of high taxation it is no longer possible to develop a medium-sized business under private ownership, and as a result the character of the ownership and structure of British industry is changing. A plea is made that United Kingdom tax on profits arising overseas should apply only to those profits remitted to the United Kingdom, 'otherwise the long-term damage to the British economy which depends so much on foreign trade may be irreparable.' As a result of continuing world inflation new capital has to be found to finance existing overseas enterprises and if this cannot be done out of undistributed profits such enterprises will either shrink in size or pass into the hands of local nationals.

Abolition of profits tax is urged by the Federation as it results in a 'disproportionate burden upon company reserves, and upon ordinary shareholders.' The outstanding defect in the present taxation of salaries and wages lies, in the opinion of the Federation, in the discrepancy between the average rate and the marginal rate which is seriously aggravated by the high level of taxation. It would be easier to effect radical changes in the tax structure if these were carried out in conjunction with a reduction in the level of taxation. Short of a substantial reduction in the level of taxation as a whole the removal of the worst effects of income tax upon the incentive to work requires a fundamental change in the tax structure by reducing the gap between the average rate of tax and the marginal rate on the top slice of wages or salaries. The memorandum stresses the effect of the present system on higher earnings, and says it is not possible to reward good work in management in any way which does not result in the greater part of the reward reaching the State in taxation.

THE GERMANIUM TRIODE

ONE of the industry's lesser known by-products came into the news recently when the radio correspondent of the *Daily Telegraph* referred to a new crystal valve which was demonstrated at the Radio Exhibition at Earls Court. This valve, which is claimed to last 50 to 100 times longer than existing wireless valves, is no bigger than a cigarette stub end. It is a descendent of the crystal 'cat's whisker' detectors used in the early days of broadcasting and is called the germanium triode. Manufactured by the General Electric Company, its first applications are likely to be in electronic computing machines, lightweight radio sets, and deaf-aids. The gas industry's interest in this new valve lies in the fact that it is made from gasworks flue dust—a fact which was specifically mentioned in the newspaper report.

TO BLUSH UNSEEN?

FROM the day the first gasometer reared its crown above the surrounding landscape controversy and acrimony have raged around it. Indeed, it would scarcely be any exaggeration to say that many beauty spots owe their very existence to the presence of a gasholder, since they seem never to have been regarded as such until the 'monstrosity' appeared within the range of vision. It is of particular interest to discover, therefore, that a holder is to be honoured by the attention of the Royal Fine Arts Commission. According to a report in the *Evening News*, the Southern Gas Board is desirous of erecting a holder at Abingdon—a town which is justifiably proud of its amenities and of the attractions of its ancient buildings. Local consent to the erection of the holder is subject to two conditions—that it shall be painted a colour to comply with the recommendations of the Royal Fine Arts Commission and that the gas board ensure that it is 'decently screened by trees.'

We have no doubt the Commission will be duly flattered by the request for their advice in connection with so outstanding an object as a gasholder—just as the industry will feel gratified that this much misunderstood plant is at last fit to be bracketed with the fine arts. But it is surely rather a backhanded compliment to the knights and professors of the R.F.A.C. to ask them to suggest a suitable scheme of decoration for the holder and then 'decently screen it with trees.' It savours somewhat of accepting a picture for the Royal Academy and hanging it face to the wall. Rather should we have thought that having secured for themselves the distinction of a monument finished in accordance with the recommendations of so august a body, the burgesses of Abingdon would have hastened to sweep away everything which could hide it from the public gaze.

THE CLOSED SHOP

IN the *Journal* of June 20 we referred to the action of the Edmonton Council in making membership of a trade union a condition of appointment for the post of borough engineer and surveyor. It is gratifying to note that the protest from the Engineers' Guild against such interference with professional and personal freedom has been effective. At a meeting of the Edmonton Council on August 28 a letter from the Minister of Transport was considered, which stated that unless the condition of appointment was withdrawn the Minister would be unable to make a grant from the Road Fund towards the salary of the successful applicant. A resolution that the Council should meet the Minister's requirements was passed unanimously; and as a result the post is to be re-advertised without the objectionable condition. The Guild has tried to obtain from the Durham County Council an assurance that chartered civil, mechanical, and electrical engineers, whether applying for posts, or already in the Council's employ, shall be exempt from being questioned about membership of a trade union or other appropriate professional organisation. This assurance has not been received, and as a result the Guild has written to the Minister of Transport, informing him of the circumstances, and reminding him of his answer to Mr. W. Robson Brown's question in the House on June 18 last about similar conditions being enforced by the Borough of Edmonton, and his reply to the effect that he declared compulsory trade union membership incompatible with the conditions under which he made a grant from the Road Fund to the engineer's salary. The Guild Council is of the belief that the professional engineers employed by the Durham County Council are subjected to compulsory trade union membership. The Minister has been asked, therefore, if he will cease to pay from the Road Fund the grant towards the salary of the Durham County Engineer.

SENIOR GAS OFFICERS' JOINT COUNCIL

COMMENTING on the constitution and aims which were formally adopted at the first meeting of the Senior Gas Officers' Joint Council, Mr. L. A. Garratt writes in the September issue of the *Journal of the National Association of Local Government Officers* that it is intended to settle by negotiation terms and conditions of service for officers, except those who 'contract out.' It is appreciated that there may have to be some senior officers outside the purview of the Council (one half of which comprise representatives of the Gas Council and the other half representatives of Nalgo and the Gas Officers' Guild), otherwise the position might arise where the employers' side would consist of members of the Gas Council or area boards only. No doubt at national level a joint council could be operated in this way, but if and when area committees are set up, difficulties would arise.

In certain areas there appears to be some doubt as to the need for this council. Some employers consider they can best deal individually with each officer in receipt of a salary outside the purview of the National Joint Council for Gas Staffs, and some officers also hold this view. It is difficult to believe that the majority of officers receiving more than £850 a year are in a vastly different position from those receiving £850. If it is conceded that there should be a ceiling above which salaries and conditions of service should be agreed between the employer and the individual, there can be no justification for so low a figure. The gas industry has its own peculiar problems, one being that the title given to a post does not mean that the duties and responsibilities are identical in each area. The organisation and administration of most areas are fundamentally different, but similar problems have been overcome in other services where terms and conditions have been negotiated to a much higher figure without jeopardising those who may have been engaged on a favourable basis before the introduction of the agreed terms. Officers should remember, says Mr Garratt, that the decision to 'contract out' rests with them, and that, unless agreement is reached in the joint council as to which officers shall be excluded, a ballot is to be held in those areas where doubt exists. Before deciding to 'contract out,' officers should consider the position carefully and not be persuaded to do something which is opposed to their better judgment. It may not prove necessary to negotiate terms and conditions of service in the same form as for other staff, but in a nationalised industry there is greater difficulty in maintaining that personal contact necessary to ensure satisfactory results from individual arrangements.

Letters to the Editor

GAS COOLING AND WASHING PLANT

DEAR SIR,—My disappointment at being unable to attend Mr. McKean's presentation of his valuable paper on 'Gas Cooling and Washing Plant', was renewed on reading in the *Journal* of August 15 of the most interesting discussion this paper provoked. Even at this late stage I feel it might be useful to provide a commentary on some of the matters raised in the discussion, more especially as your Editorial called for comment.

Gas Cooling

Regarding the application of a refrigeration circuit to water tube condensers, we also have investigated this possibility and our tentative conclusions support Mr. Cullingworth's views, that only in exceptional circumstances is it likely to have economic justification, as the cost of refrigerated water so greatly exceeds that of water re-circulated through an efficient forced draft cooling tower, that the saving in condenser and scrubber capacity is unlikely to compensate for this.

As Mr. Keillor has implied, the refrigerating concept naturally leads on to the heat-pump, which again has received our preliminary consideration. Here everything depends on having a suitable outlet for the hot water from the system, the temperature of which has been up-graded well above the usual 120°F. at the outlet of a condenser. The volume of water required for boiler feed purposes would usually be much too small to absorb that available, and so district heating immediately comes to mind. But here the quantity of heat available would be too small for district heating on any appreciable scale and moreover the districts in which the gas-works are located might usually be thought unsuitable for such schemes if they were to have economic justification. District heating schemes are all very well in theory but usually fall down on grounds of practical expediency. That they are not impossible is, of course, proved by (among others) the Pimlico scheme providing a domestic hot water supply from the Battersea power station, and by the employment of the low grade heat of River Thames water, up-graded by heat pump, for heating the South Bank Festival Hall.

Much was said about the types of condensers which might supersede those currently employed, both in the discussions and subsequently in your correspondence columns. It would appear that the most likely form of atmospheric condenser to compete with the modern water tube condenser is the water-filmed evaporative unit, to which Mr. Cullingworth and Mr. Silver have referred. Dry atmospherics, whether plain, annular, finned, or forced draft, are unlikely to provide heat transfer coefficients higher than 1-3 B.Th.U., compared with, say, 25 B.Th.U. with water tube condensers. On the score of the steel and iron supply position alone, it is therefore unlikely that apparatus requiring such a large weight of metal will find wide favour. On the other hand, an evaporative type cooler providing a high transfer coefficient and low water consumption may well secure economic justification given the right conditions, as postulated by Mr. Silver, and exemplified by the North Thames Gas Board's plants. A possible drawback is that such units have the structural design limitations inherent in cast iron, unless statutory, economic, and technical justification can be obtained for the employment of galvanised steel.

Reference was also made to underloaded condensers (or those operating on a very cold water supply in winter) resulting in excessive outlet water temperatures when the condensers were provided with automatic control of the outlet gas temperature. When the number of unit condensers does not permit of reduction of condenser surface by shutting off a complete unit when conditions demand, then it may be desirable in some circumstances to design the condensers so that the water may be by-passed round any desired number of condenser passes. For example, a 6-pass vertical tube condenser with top water connections may be provided with weirs in the upper header between the 1st and 2nd, and the 3rd and 4th passes, to bypass water from the inlet to the 3rd or the 5th pass. If this does not provide sufficient flexibility, any required number of passes may be bypassed by means of a suitable system of water pipes and valves. As the load on the condenser decreases, the minimum number of water passes is bypassed so that with the gas temperature controller in operation, the outlet water temperature does not exceed the required maximum.

Tar Fog Extraction

Turning to electro-detarrers, there seem to have been some adverse comments, despite the fact that I would believe that Mr. McKean in quoting an example of Livesey washers removing all but 3 grains/100 cu. ft. of tar fog, was not contrasting this with the slip from the Rotherhithe electro-detarrers which he indicated was immeasurable. I dealt at some length with the causes of residual hydrocarbons in the purifiers, following the installation of electro-detarrers, in my Communication No. 358/165 to the Institution of Gas Engineers, to which the author has kindly referred. From this it will be apparent that the installation of electro-detarrers does not automatically result in the complete elimination of tar in oxide, since—

(a) Electro-detarrers will only effect their guaranteed removal efficiency (usually of 99%) providing they are properly designed, suitably rated for the prevailing gas loading, and properly maintained; otherwise their efficiency may drop, perhaps to 96 or 97% which, with an inlet concentration of, say, 200 grains/100 cu.ft., would result in a slip of 6 or 8 grains, which alone would provide a tar-in-oxide content of about 0.6 or 0.8%.

(b) Any drop in temperature which may occur after a detarrer—*e.g.*, in the later and relatively inactive boxes of a purification sequence, will result in the deposition of further condensable hydrocarbons which were in the vapour phase at the detarrer. (Surely the answer to Mr. Broomhead's question is that it is not 'pick-up' of flushing tar in the secondary condensers, but additional oil fog condensation, resulting from temperature drop, which produces more fog at this point?). This is the basis of the present day recommendation of a final oil scrub immediately prior to the purifiers, such as will be effected on the West Midlands Gas Board's new Swan Village plant.

(c) Mr. Hawes suggested that it was not that gum had not always been present in the purifiers, but that with the elimination of tar fog that this became apparent. This appears true of the polymers to which he specifically referred, and probably of nitrogenous gums too. Whether an electro-detarrer results in a slight increase or a slight decrease in the total gum content of the gas has yet to be finally established. On the one hand there is evidence that an electro-detarrer will act as a gum eliminator in that it will remove any preformed gum and in that the potential reactions between unsaturated hydrocarbons and oxides of nitrogen may be accelerated in the ionisation zone and the resultant products precipitated before the gas leaves the detarrer (rather as occurs in the Koppers nitric oxide brush-discharge converter for gum elimination). On the other hand there will probably be some slight additional production of nitric oxide in the ionisation zone. Which effect will predominate has not yet to my knowledge been proved, although my Company has projected some research work on these lines. However it should be safe to assume that the change in gum content following a detarrer will not be of great significance, and I should like to know more about any examples to the contrary before accepting that it was an electro-detarrer which had been responsible for a rise in the 'tar' content of oxide, as it would appear more likely that other conditions must have changed.

(d) I have yet to come across an authenticated example of a Livesey removing more than 70% of the tar fog present and would think that 50% might be nearer the average. In these circumstances I can only assume that in obtaining 3 grains at the outlet of two Liveseys in series, the inlet concentration could not have exceeded 30 grains, in which case an electro-detarrer would have reduced this to 0.3 grains.

In regard to ammonia extraction, as a Livesey is only a single stage scrubber, even allowing for a high stage efficiency, it is unlikely to be more effective than, say, two bays of a static scrubber, at the expense of a considerably greater pressure loss and capital cost. As the power required for overcoming this pressure loss will also be rather greater than that required for high tension current production in an electro-detarrer (indeed, Mr. McKean stated that this approaches double the detarrer power consumption), it is unlikely that a Livesey washer can justify its cost as a separate unit requiring its own connections and valves, in comparison with the standard form of tar and ammonia extraction by electro-detarrer

and static scrubber. Of course it may be sound practice to retain an existing Livesey as a standby, but it is difficult to visualise a reversion to the employment of Livesey washers on works of any size.

(e) There are occasions when high speed turbo-exhausters will so greatly reduce the tar fog content of gas as to lighten the duty of an electro-detarrer to an extent which enables a given size of detarrer to be rated for a higher than standard gas capacity. There may even be occasions when two stages of electro-detarring would otherwise be employed, when turbo-exhausters may eliminate the need for the first stage.

Static Scrubbers

Regarding the bay efficiency of static scrubbers which loomed so large in the discussions, these are, of course, meaningless unless correlated with the true ammonia-liquor equilibria curves which are so difficult to obtain. Unfortunately for the designer of these plants there are no standard sets of curves of universal application. Every scrubber will have its own partition curves based on the conditions obtaining in that scrubber, not only in respect of the corrections due to temperature, acid gas contents and the particular liquor employed (if from an external source) and produced in the scrubber, but also for the time factor, which in turn depends upon the sump capacity of the scrubber bays. If a standard set of curves is employed for all bays of a scrubber, the apparent bay efficiency will change throughout the scrubber. In reality the true bay efficiency is unlikely to change, but the partition factors do. Hence while it may be possible, given the time and energy, accurately to assess the performance of a given scrubber once in operation, it is difficult for the designer to predict with any great exactitude, the conditions under which a projected scrubber will operate.

Yours faithfully,

K. W. FRANCOMBE.

Whessoe, Ltd., Darlington.
September 5, 1951.

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SULPHUR PRODUCTION

DEAR SIR,—The many references to sulphur in your columns and throughout the Press at large may prompt enquiries as to the achievements of the British gas industry—past, present, and to come—in supplying the long foreseen national need.

From the report of the British Gas Federation dated October, 1943, it may be inferred that in the years before the war the gas industry contributed some 300,000 tons per annum of sulphuric acid to help the national economy.

Official statistics show that in 1948 the industry sold
Sulphate of ammonia 69,000 tons at £11 15s. per ton.
Spent oxide 186,000 tons at £1 15s. per ton.
Sulphuric acid 35,000 tons at £4 2s. 10d. per ton.

Although figures showing trends over a number of years do not seem to be readily available, there may be a good story. Why not 'write the vision, and make it plain upon tables, that he may run that readeth it.'?

The official statistics to which reference is made are from the 'Ministry of Fuel and Power Statistical Digest 1948 and 1949,' Table 120.

Yours faithfully,

T. B. V. HIRST.

9a, Cheviot Court, Luxborough Street,
London, W.1.
September 1, 1951.

◆ ◆ ◆

NEON SIGN IN DESERT

DEAR SIR,—I was interested to read the paragraph headed 'Neon Sign in Desert' in 'American Spotlight' in the *Journal* of August 22. The Chairman of our agents in the Arab countries of the Middle East, Mr. Emile Bustani, a frequent and well-known visitor to London, was here at the time, and I took the opportunity of bringing this article to his notice.

He says that although gas is plentiful in the oilfields in the Middle East, up to the present its use has been restricted to certain residential areas for European staff. Kerosene operated Electrolux refrigerators have had, therefore, so far the better market in the Middle East. Electrolux sales records show refrigerators have been actively sold throughout Egypt, Iraq, Saudi Arabia, Syria, the Lebanon, and Persian Gulf areas, since the compaign started just after the war. He adds: 'We now foresee larger sales for the future and our active sales campaign, although not in the neon sign fashion (because we don't know where electrical power can be produced on the desert sands!) has produced very good results. We have been able to give Electrolux clients full satisfaction in both cost and service. We are selling at least ten times as many gas or kerosene refrigerators as any other manufacturer, American or British. In fact our limitation at present is supply from this country. There is no doubt that the gas age is coming.'

Mr. Bustani is at the head of a powerful Arab trading concern, the Contracting and Trading Company of Beirut. This concern has subsidiary companies in all the larger markets of the Middle East, and trades through dealers in the smaller ones. Thus the whole of the Arab countries from Egypt to the smallest Sheikdom in the Persian Gulf, is actively covered. The Company owns five aeroplanes, which enable its senior staff to maintain regular contact with the farthest points of their large territory.

Mr. Bustani is right when he says he knows of no neon sign in the desert. We do know, however, that Servel have a small neon sign in the town of Jeddah, which while hardly being in the middle of the desert, is admittedly at the beginning of the road to Mecca. It might interest your readers to learn that we have a 'bigger and better' neon sign in the vicinity.

Yours faithfully,

S. BROUGHTON.

Electrolux, Ltd.,
153-155, Regent Street, W.1.
September 6, 1951.

Personal

Mr. W. J. Drummond, Deputy Chairman of the National Coal Board, has been appointed a member of the Industrial Coal Consumers' Council and of the Domestic Coal Consumers' Council, in place of the late Sir Arthur Street, formerly Deputy Chairman of the Board. Before his appointment, last July to the Deputy Chairmanship of the N.C.B., Mr. Drummond was Chairman of the North Western Division.

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Mr. John C. Gray has been appointed Press Officer to the Council of Industrial Design, following the resignation of **Mr. Ronald Amos** to take a new post. Since April, 1950, Mr. Gray has been Overseas Press Officer of the Council, specialising on the contribution of British industry to the Festival of Britain. For three years before that he was a screen writer with 'This Modern Age' Film Unit and a contributor to various periodicals. In his new capacity he will combine the duties previously performed by Mr. Amos and Mrs. D. C. M. Warner.

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Mr. James Williamson, Distribution Superintendent of Kirkcaldy district of the Scottish Gas Board, was honoured last week by members of the works and distribution department on the occasion of his retirement after 42 years in the gas industry. Mr. John H. Fulton, Engineer and Manager, making the presentation of a Westminster chiming clock, referred to the high esteem in which Mr. Williamson was held in the undertaking and the interest and enthusiasm he had shown in his work during his long period of service. Mr. Williamson was well known throughout the district and numerous consumers testified to his ability and skill in the carrying out of all work coming under his control. Evidence of this was shown by the presence of a beautifully decorated cake presented by a local baker.

News in Brief

Final Rehearsals for 'Rose Without a Thorn' were in progress at Torquay when King Hal, played by Lieut.-Cmdr. Tony Cole-Hamilton, developed whooping cough. He was rushed to Exeter airport and flown over Dartmoor. Then he went to a gasworks, inhaled fumes, and was cured. And the show went on. [Medical journals please copy.—Ed. G.J.]

The £1,500 Claim lodged by the North Eastern Gas Board against Halifax Corporation is to go before the Courts. It was announced at the monthly meeting of Halifax finance committee on August 27 that the Board had served a writ against the corporation. Ald. J. Radcliffe (Finance Committee Chairman) afterwards commented: 'If they take legal action we shall fight them.'

Scottish Juniors.—It has been found necessary again to postpone the visit of the Scottish Junior Gas Association (Western District) to the Dumbarton gasworks which, as indicated in the *Journal* diary last week, was to have taken place next Saturday, September 15. The visit, already postponed from last session, was to have been Mr. A. McInnes's President Day visit. It is hoped to hold it some time during the 1951-52 session.

The Stand of the Oxford and District gas undertaking, Southern Gas Board, at the City's Festival Utility Services exhibition which opened recently, was of particular interest and attracted a good deal of attention. It dealt with the story of the raw materials in coal and their extraction by gas-making. A water gas plant model was on show and the products obtainable from coal were listed. Features of the stand were the work of Mr. G. P. Humphreys, display artist.

Hinckley Urban District Council which, in the Appeal Court, lost its claim for £30,178 against the West Midlands Gas Board, has decided on the advice of its counsel, not to proceed with an appeal to the House of Lords. The claim was to recover profits on Hinckley gas undertaking when it was taken over under nationalisation.

A Threatened Strike of workers at Clonmel (Co. Tipperary) gasworks has been averted at the last moment by the intervention of the mayor. The strike was to have been in protest against the non-appointment of the local candidate and acting manager, Mr. John Kneeshaw, to the permanent post. Mr. G. P. Moynihan, of Bantry, was appointed by the county manager on the recommendation of the local appointments committee, and he arrived at the gasworks on September 5, when the strike was due to begin. The men agreed, however, to accede to the mayor's request to continue working as usual.

Competing in the Welsh Youth and Boys' A.A.A. Championship at Ebbw Vale, P. H. Nutton (who is the eldest son of Mr. J. H. Nutton, Group Distribution Officer of the Swansea and Carmarthen groups) added to his many successes in the athletic field during the past two years, by winning for the second year in succession the 110 yds. hurdle championship. In doing so he set up a new record of 15.6 secs. against 16.1 secs., the previous record, and his time would undoubtedly have been better still if the weather conditions had not been so bad. At the same event he won the long jump championship with a jump of 19 ft. 3 in. and in his third event, throwing the discus, he gained a Welsh standard medal by a throw of 114 ft.

Sulphur from the Gas Industry.—There was an accidental transposition of a long passage in the extract from Dr. J. G. King's *Times Review of Industry* article on 'Sulphur from the Gas Industry,' on page 573 of last week's *Journal*. The last 29 lines in the second column should in fact have appeared as the first 29 lines of that column.

A Course of Evening Lectures on 'Refractories, their Manufacture, Properties, and Uses,' will be delivered by L. R. Barrett, M.A., B.SC., A.R.I.C., M.INST.F., at the Northampton Polytechnic, St. John Street, London, E.C.1, during the session 1951-52, on Tuesday evenings at 7 p.m., commencing on October 2. Full particulars may be obtained from the Principal.

Power Cuts.—The Association of British Chambers of Commerce has sent to the Chancellor of the Exchequer and the Minister of Fuel and Power a memorandum on electricity supply. This calls for a suitable system of warning for industry of impending power cuts in order to prevent the spoiling of valuable materials and products. It calls for increased capital expenditure on electrical supply resources.

The Illuminating Engineering Society has published its programme of meetings for the session 1951-52 which begins in October. The programme includes meetings to be held in London and at the various centres and groups in the provinces. The total number of meetings arranged by the Society for the 1951-52 session is over 130. Copies of the programme are obtainable from the Secretary of the Society, 32, Victoria Street, London, S.W.1.

Diary

Sept. 17.—Eastern Gas Consultative Council: Connaught Rooms, Great Queen Street, 2 p.m.

Sept. 18-21.—Association of Public Lighting Engineers: Annual General Meeting and Conference, Brighton.

Sept. 19.—South Western Gas Consultative Council: 34, Bridge Street, Taunton, 11 a.m.

Sept. 19.—Wales and Monmouthshire Section, Institution of Gas Engineers: Autumn Meeting, Llanelly.

Sept. 19.—Southern Gas Consultative Council: Social Welfare Club Room, Reading Gasworks, 2.30 p.m.

Sept. 20.—National Coal Board (South Western Division): Inauguration of Coke Oven Plant at Nantgarw by the Right Hon. Philip J. Noel-Baker, Minister of Fuel and Power, 3.15 p.m.

Sept. 20.—Gas Council Commercial Managers' Committee: Edinburgh, 10 a.m.

Sept. 21.—Institution of Gas Engineers (North of England Section): 'Some Aspects of Gas Manufacture Practice in the North Thames Gas Board Area', Dr. J. Burns, G.M., Chief Engineer, North Thames Gas Board. Seaburn Hotel, Sunderland.

Sept. 27.—North Thames Gas Consultative Council: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Sept. 28.—Scottish Junior Gas Association (Western District): Presidential Address of J. F. Wilson. Royal Technical College, Glasgow, 5.30 p.m.

Sept. 29.—Eastern Junior Gas Association: Presidential Meeting, Cambridge.

Sept. 29-Oct. 4.—International Bakers and Confectioners Exhibition, Olympia. Gas Council Exhibit.

Oct. 5.—Institute of Fuel (South Wales Section): 'Fuel Efficiency in the Oil Industry,' M. J. Stradling. South Wales Institute of Engineers, Park Place, Cardiff, 6 p.m.

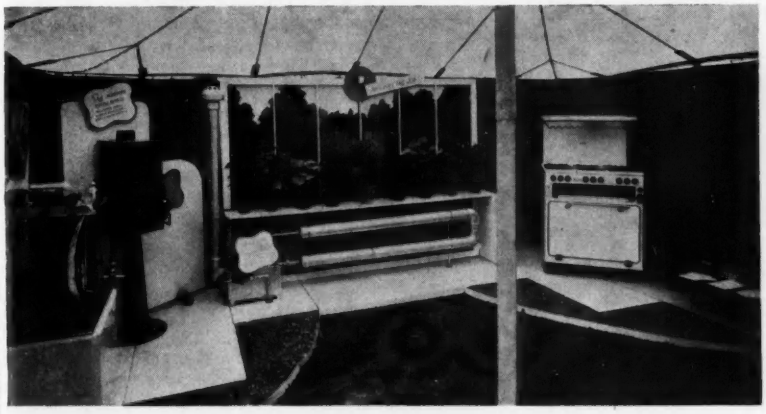
Oct. 6.—Western Junior Gas Association: Opening Meeting, Swindon. Visit to Gorse Hill Works, followed by Paper by H. Hobbs.

Oct. 6.—Yorkshire Junior Gas Association: Annual General Meeting. Address by Dr. R. S. Edwards, B.SC., A.R.C.S., Chairman, North Eastern Gas Board.

Oct. 8.—Institute of Fuel (Midland Students' Section): Chairman's Address, H. B. Bassett. The University, Edmund Street, Birmingham, 7.30 p.m.

Oct. 8.—Institute of Fuel (North Eastern Section): 'Pore-Size Analysis of Metallurgical Coke,' Dr. A. Gilchrist and Dr. A. Taylor. King's College, Newcastle-upon-Tyne, 6.30 p.m.

DUDLEY HORTICULTURAL SHOW



At the Dudley Horticultural Show, the West Midlands Gas Board, Dudley District, showed how the gas industry sets out to meet rural requirements with an incubator, a greenhouse heater, and a gas-fired steam boiler. Domestic needs were considered with a display of water heating appliances, washing machines, and cookers. An item of unusual interest was a gas-heated aquarium housing fish loaned by the Dudley Zoological Society. A rustic style fascia to the marquee, tubbed trees, benches and the caption 'Gas for Gardening,' completed the horticultural picture.

LOWER GAS COAL STOCKS

LATEST Ministry of Fuel and Power statistics show that the total output of coal for the week ended September 1 was 4,390,200 tons, comprising 4,186,400 tons of deep mined coal and 203,800 tons from opencast workings. In the previous week deep-mined coal contributed 4,019,000 tons and opencast 244,000 tons to a total of 4,263,000 tons. In the corresponding week of last year production amounted to 4,132,100 tons, of which 3,924,300 tons was deep-mined.

So far, in 35 weeks this year, production has totalled 146,851,800 tons, compared with 143,621,600 tons last year.

During the week ended August 25 there were 698,400 persons on the colliery books, of whom 286,900 were face workers, against 699,300 (287,300) in the preceding week and 694,300 (286,900) in the corresponding week of last year.

Exports of coal during the week ended August 25 were 196,000 tons, an increase of 53,000 tons over the previous week and 30,000 tons more than in the corresponding week of last year. Imports so far this year amount to 1,206,300 tons.

Electricity undertakings held 4,684,000 tons (equal to 5.3 winter weeks' consumption), while gas undertakings held 2,373,000 tons (3.7). A year ago distributed stocks included: Electricity, 3,967,000 tons (5.1), and gas, 2,407,000 tons (4). Merchants held 877,000 tons of house coal, compared with 847,000 tons in the previous week, and 1,418,000 tons a year ago.

The Industrial Coal Consumers' Council, which met at the Ministry of Fuel and Power on September 5, warned industrialists to 'plan their operations on the assumption that there will be a serious shortage of fuel (especially large coal, carbonisation coal and coke), rather than to plan on an optimistic basis which may not be realised.'

After having heard reports from different authorities of the widening gap between production and consumption, due to the increased demand for fuel for all purposes, the Council decided strongly to recommend to the Ministry to draw up a realistic winter programme of individual coal and coke allocations at the earliest possible moment.

South Bank Visit

The venue for the annual works outing of Cannon Iron Foundries Ltd., on September 1 was the Festival of Britain at South Bank.

A special train conveyed over 500 employees and friends to Waterloo station. Almost every section was visited by members of the party, and practically the whole range of exhibits were viewed.

Quite a number of Midlanders also visited the Battersea Park pleasure ground, where, in spite of rain, an enjoyable time was spent.

Film Shows organised recently by the Oxford gas undertaking at Therm House, St. Aldate's, Oxford, fitted in excellently with the industrial side of the city's Festival of Britain celebrations. Arranged by the Engineer and General Manager, Mr. S. C. Bentley, the shows were given by Mr. G. H. Lowe. Among the films shown were 'The Industrious Flame,' which depicted the many uses of gas in industry, and 'Behind the Flame,' the story of gas manufacture.

Steel for Refrigerators

MR. R. H. LINE, a member of the Council of the British Refrigeration Association, speaking at a luncheon given by the Association in London on August 31, appealed for more steel for the industry. He said one ton of steel given to the refrigeration industry produced much more in exports than if it were given to the majority of other industries.

Mr. E. G. Batt, Director and Secretary of the Association, appealed for a reduction in the purchase tax on their goods, and said: 'Unless there is some alleviation it is possible that the industry may not be able to maintain its export performance of recent months, let alone improve it.'

Mr. A. G. Bottomley (Secretary for Overseas Trade) said that the shortage of steel was rather grim at the moment, but he was far from being a pessimist. The outlook for the future—but not for the relatively near future—was more promising, he added, when one considered the great new steel plants, such as those in South Wales, which would be coming into operation.

Mr. Bottomley said that in the last 12 months there had been a most alarming rise in prices of imported raw materials, but Britain as an exporter could not remedy that by putting up its prices overnight. The only way we could keep solvent and carry out necessary rearmament was to expand our exports to the limit wherever possible.

On the shortage of steel he said: 'The country is faced with a vast problem to which there is no completely satisfactory solution. The share-out of steel must be considered in relation to the rising demands of the defence programme and demands for essential civil production, such as electric power stations.

'Subject only to those considerations, both general and sheet steel—and, indeed, all other essential raw materials—will be made available to the greatest possible extent to industries, such as refrigeration, which have shown an outstanding production increase since the end of the war and which are contributing so well to our national export drive.

'I must, however, utter a warning. It would be wrong to assume that any more steel will be available to your industry in, say, 1952, simply because an allocation scheme is being introduced in December. It is just not there. What we hope will happen is that the steel available, after defence requirements have been met, will be better distributed in the sense that discrimination can be exercised in favour of those industries which are contributing most to the national economy.'

Some people were becoming alarmed that the development by other countries of their own economies might kill Britain's prosperity by reducing her exports. It was true that, as a result of that process, we might lose our markets for some exports, but other vast markets would be opened. So long as we retained our technical skill, tried to improve our products, and searched for markets we would remain prosperous and could look forward to a continued increase in our standard of living.

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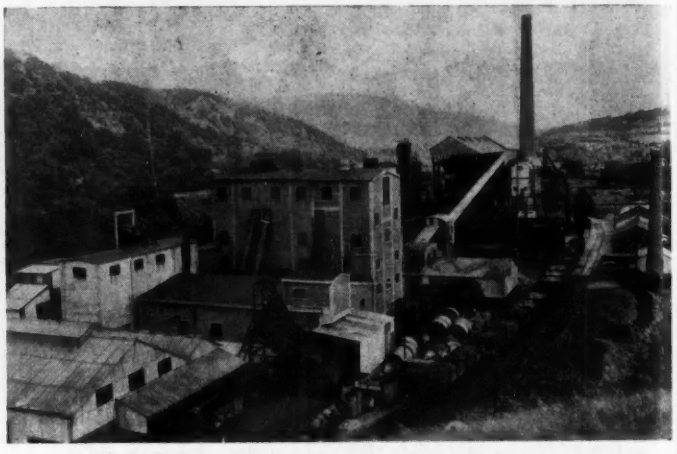
SMOKELESS FUEL FROM SOUTH WALES

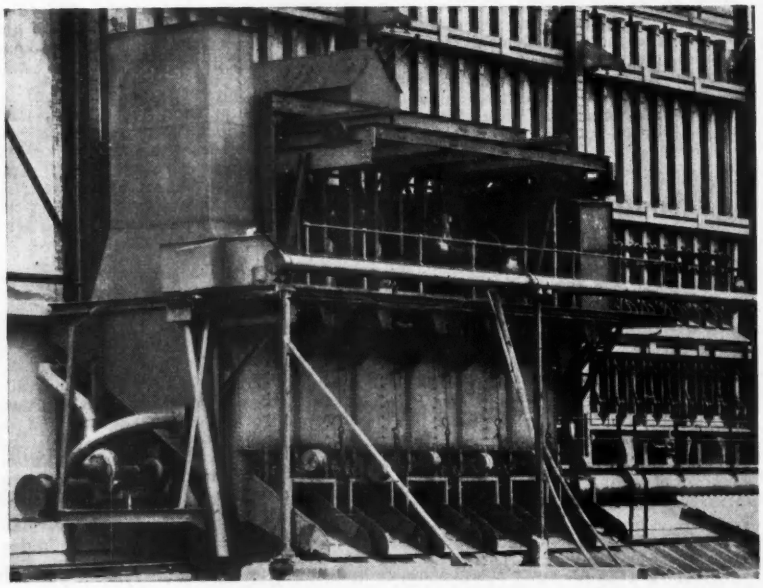
Inauguration of Phurnacite Plant Extension



General view from the briquetting plant end.

The inaugural ceremony for the extension to the 'Phurnacite' plant—the only one of its type in the country—situated at Aberaman, in the Aberdare Valley, Glamorgan, South Wales, was performed on September 6 by the Right Hon. Alfred Robens, Minister of Labour and National Service, and formerly Parliamentary Secretary of the Ministry of Fuel and Power.

THE original 'Phurnacite' plant was completed by Powell Duffryn, Ltd., in 1942. The equipment had been ordered in 1939. The Disticoke Co., Ltd., Paris (builders of a somewhat similar plant at Noeux-les-Mines in the Pas-de-Calais) had agreed to supply the oven section and Powell Duffryn, Ltd., were themselves to build the briquetting plant. Owing to the war, much of the equipment could not be sent from France, but Powell Duffryn, Ltd., used what materials were available in this country and the erection of the plant went on under the supervision of the late Mr. Ivor Williams, Chief Engineer to the Company.



Quenching car and extractor.

The plant now operates as a unit of the Carbonisation Department of the South Western Division of the N.C.B.

'Phurnacite' is the trade name of a carbonised ovoid briquette and has become well-known to users of closed-type domestic appliances. The fuel is much in demand. The ovoids, which are extremely hard, can be handled quite roughly with little breakage or dust formation occurring and are uniform in size and low in ash.

It had been realised for some years past that, in order to meet the increasing demand for 'Phurnacite,' it was desirable to increase the size of the plant as soon as possible, but supply difficulties—of semi-silica bricks in particular—have prevented this from being done until recently and it has only now become possible through the purchase by the N.C.B. of semi-silica materials from abroad. By this means the number of ovens has been doubled.

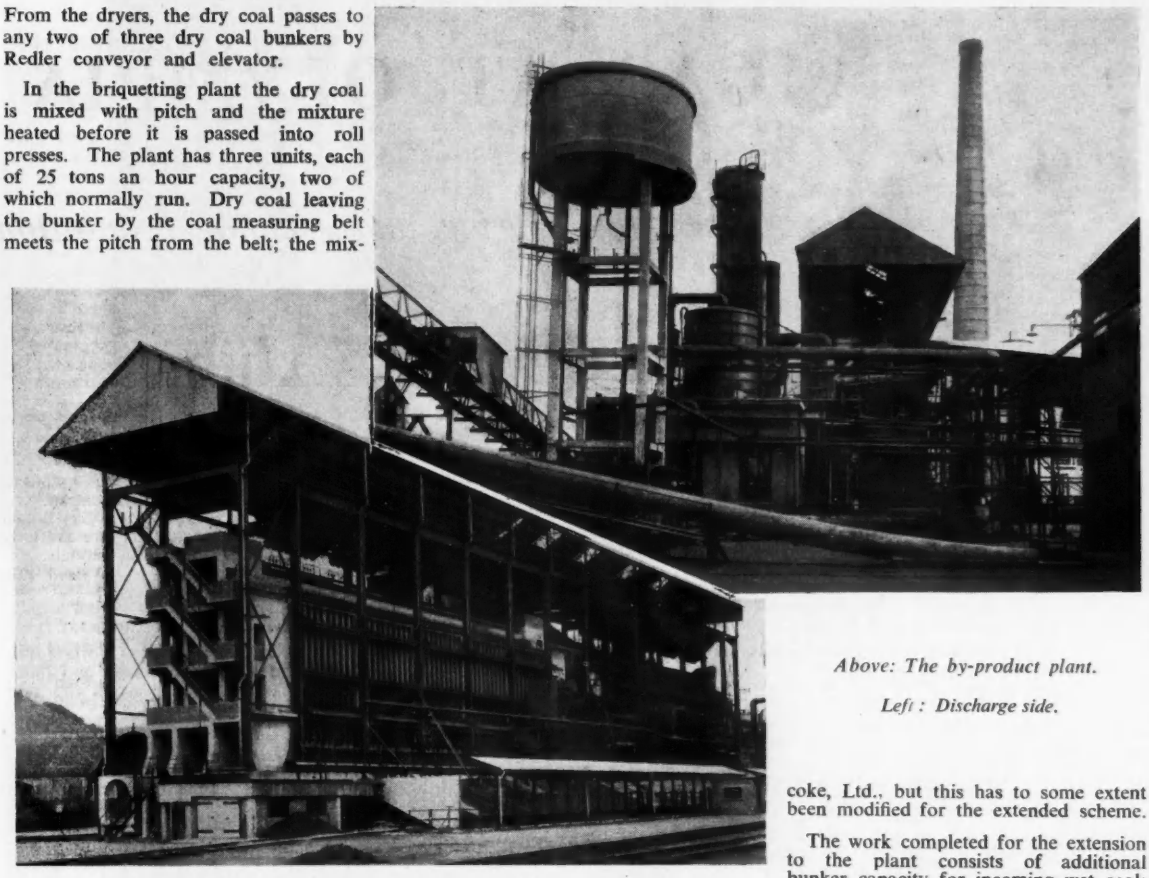
The plant process consists in briquetting the Aberdare Valley coals with pitch, subsequently carbonising the product to produce a hard, uniform, smokeless fuel. The installation comprises:

(1) Coal handling and drying plant.
(2) Briquetting plant.
(3) Carbonising plant.
(4) Screening plant.
(5) By-product plant.

Washed coal is brought into the plant by rail and elevated into reinforced concrete surge bunkers; thence it passes via feed tables, conveyors, and elevators, to two of three vertical type coal dryers, each of which is about 8 ft. diameter by 32 ft. high and about 25 tons an hour capacity. The source of heat for each dryer is a pulverised fuel-fired furnace with an International Combustion Impax mill; the gases from the furnace pass upwards through the dryer-shell and meet the coal which cascades downwards in counter-current.

From the dryers, the dry coal passes to any two of three dry coal bunkers by Redler conveyor and elevator.

In the briquetting plant the dry coal is mixed with pitch and the mixture heated before it is passed into roll presses. The plant has three units, each of 25 tons an hour capacity, two of which normally run. Dry coal leaving the bunker by the coal measuring belt meets the pitch from the belt; the mixture is then disintegrated in a disintegrator of the cage type before being elevated to the 'pug' where it is stirred while superheated steam is introduced to raise the temperature above that of the pitch flow-point. A cooling worm then feeds the mixture into the roll press, from which the newly-formed ovoids pass over a shaker screen of the bar type and, by a chain conveyor, over the 'fins' trommel screen and then by belt to the oven bunkers. The briquetting plant operates continuously for three shifts a day and seven days a week, since the overhead bunkers at the ovens store one charge only for each oven and the coking time is short. It is one of few such plants.



Above: The by-product plant.

Left: Discharge side.

Both the original and new oven batteries were designed by Disticoke, Ltd., Paris, and each battery consists of 40 ovens—arranged in five blocks of eight and located between heavy, reinforced concrete buttresses. The ovens are of the recuperative type, heated with recycled oven gas, and have parallel walls, vertical flues, and inclined soles. The raw ovoids are charged into these ovens at the top and, at the end of the carbonising period, the bottom doors are removed from eight ovens simultaneously to discharge the red hot ovoids into a quenching car filled with water. Each oven holds just over two tons and the carbonising time is about four hours. The nominal capacity of each battery is 350 tons per day of Grade A ovoids, but rather more than this quantity is being obtained from the plant.

The quenching car discharges the ovoids over grids, through which the water escapes, on to inclined loading benches; thence by finger gates the ovoids pass on to conveyor belts and so to the screens.

The screening plant was erected by International Combustion, Ltd., and has two rows of Ty-Rock double-deck screens in parallel.

After the screening process the undersized product is bunkered and the Grade A and broken 'Phurnacite' loaded into wagons by boom loaders. (The proportion of Grade A product is high, amounting to well over 90% of the total.)

For heating the ovens in emergency, two 9 ft. gas producers made by the Power Gas Corporation, Ltd., have been installed, one of which is kept permanently on slow fire; so that in the event of any stoppage exceeding the duration of the coking time, producer gas is fed into the normal rich gas heating system to maintain the flue temperature.

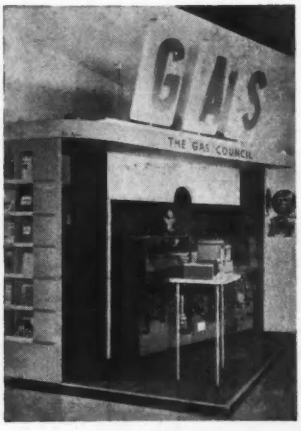
The by-product plant is relatively simple; it consists of a Simon-Carves electro-detarrer on the hot gas, direct gas cooler, B.T.H. electrically-driven exhauster, and ammonia washer. A tar catch tank, liquor circulating pump, and tar and liquor separating tanks, are also provided. The original by-product plant was designed by Disticoke, Ltd., but this has to some extent been modified for the extended scheme.

The work completed for the extension to the plant consists of additional bunker capacity for incoming wet coal; complete dryer unit with belts and conveyors; dry coal Redler conveyor; complete third roll press unit with conveyors; dry coal bunker; pitch handling arrangements with pug, cooling worm, and press, and the necessary building arrangements to accommodate this plant; complete new battery of 40 ovens with raw ovoid feed conveyors, shuttle belts, overhead bunkers, quenching car, etc.; one new gas producer; alterations to belts in the screening plant and installation of additional screens; and modifications to the by-product plant.

The cost of the work undertaken amounts to about £400,000, and about 140 men are employed.

Pressing a button which released 17 tons of briquettes on to a cooling bench, Mr. Robens said that if we had 100% fuel efficiency our coal problem would be over. We should be saving millions of tons now wasted because they are wrongly used.

Great progress had been made in fuel efficiency in industry and power stations, and other big consumers were making remarkable contributions. He would like to see the day when in every household in the country nothing was burned but smokeless fuel. It would result in better social conditions and improved standards of health in the towns and cities by ridding us of the smoke nuisance, lighten the housewife's burden, and improve comfort in the home.



GAS AT OLYMPIA

Engineering, Marine, and Welding Exhibition

Review of Exhibits

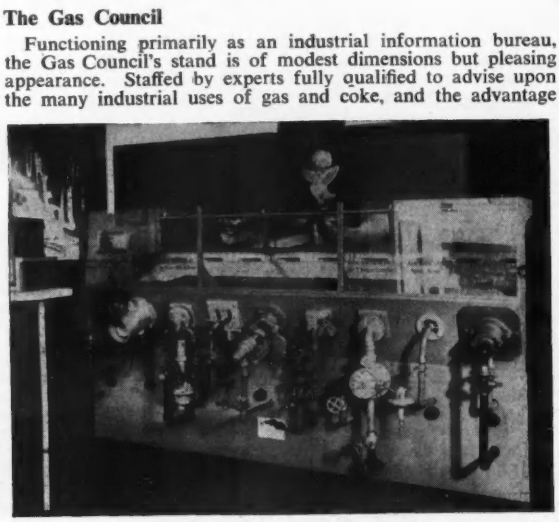
AT a time when British exports of engineering goods are higher than ever before, the staging of the Engineering, Marine, Welding and Foundry Trades' Exhibition is both timely and justifiable. This, the seventeenth in the series that commenced modestly in 1906, is a worthy successor to the 1949 exhibition which, for the first time, occupied all three Olympia Buildings. The 1951 show is equally large, if not larger, and does nothing to disprove the organisers' claim that this is an exhibition unique of its kind.

As its title suggests, it presents exhibits embracing almost the whole engineering field, with a particular leaning towards those of marine application, and with separate sections dealing with foundry and welding equipment. Throughout the exhibition organisation is most efficient, and although final figures will not be known until tomorrow, the last day (it opened on August 30), there is every indication that attendance is the heaviest yet. One reason for this is probably the fact that 70 trade and technical associations are visiting the exhibition during its run, among them the Institution of Gas Engineers, the London and Southern Junior Gas Association, and the Society of British Gas Industries, and the Institute of Fuel.

It is our intention, in the review which follows, to indicate some of the stands which are of particular interest to the gas industry. It is not claimed that this list is fully comprehensive, but it is reasonably so and we believe that this brief description of exhibits will be of assistance to our readers. Before commencing with the trade stands, however, mention must be made of one or two exhibitors who do not fall strictly into the trade class. Most important among these—from the gas viewpoint—is the Gas Council.

The Gas Council

Functioning primarily as an industrial information bureau, the Gas Council's stand is of modest dimensions but pleasing appearance. Staffed by experts fully qualified to advise upon the many industrial uses of gas and coke, and the advantage which the use of these fuels can give in the various manufacturing processes, the stand attracts plenty of attention. An exhibit of burners, designed by the North Eastern Gas Board, demonstrate the variety of types of burner which are available for different purposes. The stand also features models, diagrams and photographs, and a model of a gravity-feed coke furnace and a small muffle furnace are included.



The burner exhibit, designed by the North Eastern Gas Board, and featured on the Gas Council stand.

Department of Scientific and Industrial Research

Among the three research establishments whose work is illustrated on the stand of the Department of Scientific and Industrial Research, the Fuel Research Station presents the story of greatest interest to the gas industry.

A pilot-scale plant for recovering sulphur from power-station and other boilers, by scrubbing the flue gases with ammonia solution instead of lime, is now working at the fuel research station. Its principle of operation and control are demonstrated on the stand. By using the Vortex principle with pulverised fuel it is possible to obtain very high rates of heat release; new information on this subject is available. Other exhibits are a multi-stage compressor with an output at 1,000 atmospheres, and smoke eliminating doors for fitting to Lancashire boilers.

TRADE EXHIBITS

Accurate Recording Instrument Co., Ltd.

A wide range of recorders specially designed for the gas, dairy, and other industries, is exhibited by the Accurate Recording Instrument Co., Ltd., and also a new type of controller which has met with considerable approval in the electrical and other industries. This company is also exhibiting two new products, namely, a pressure switch and an indicating thermostate which have some unique features. The stand also gives a varied display of indicating thermometers, temperature recorders, pressure gauges, pressure recorders, tank gauges, liquid level gauges, vacuum gauges, vacuum recorders, compound gauges, differential gauges, and instruments specially designed for the marine and engineering industries.

W. H. Allen & Co., Ltd.

Displays representative of the Allen range of power generating plant, pumping plant and electrical equipment is exhibited by W. H. Allen & Co., Ltd. These comprise steam turbines, steam engines, diesel engines and gas turbines, also pumps of the centrifugal, conical, mixed and axial-flow types, as well as alternators, D.C. generators, A.C. and D.C. motors, control and switchgear for marine, industrial and public service undertakings. The displays include many photographs of Allen machinery installations in large well-known steamships and motor ships, and also in waterworks, power stations, gasworks and other essential services, and various industries at home and overseas. A series of photographs mounted on panels also show the various types of machinery in course of construction and undergoing testing in many sections of the Allen Queen's Engineering Works at Bedford.

A.P.V. Co., Ltd.

Making their first appearance at the exhibition, the A.P.V. Co., Ltd., devote of their space to the A.P.V.-Cooper stainless steel gate valves which they manufacture under an agree-

ment with the Cooper Alloy Foundry Company of New Jersey, U.S.A.; these valves are designed with split wedges and rising spindles. As the largest manufacturers of stainless steel sanitary pipe fittings in this country, these products are also shown, both welded and expanded, including plug cocks, bends, tees, etc. The foundry sales department exhibit castings in aluminium, gunmetal and stainless steel. Of particular interest is a one-piece casting for a sack truck cast in aluminium alloy, together with the completed unit.

Audley Engineering Co., Ltd.

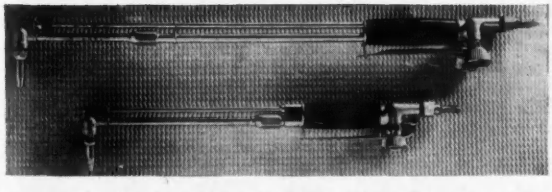
On a neat and attractive stand the Audley Engineering Co., Ltd., display their range of lubricated plug valves in steel, cast iron, stainless steel, Audcoloy bronze, and reinforced ebonite. Also shown are sulphate resisting valves and the pneumatic operation of valves. The valves are exhibited for working pressures ranging from 15-5,000 p.s.i. Making their first appearance are the company's special compressible hypermatic valve lubricants.

Automotive Products Co., Ltd.

On the Automotive Products Co., Ltd., stand in the Grand Hall the Lockheed ratchet drive unit, widely employed for driving the rotary grates of gas producers, C.W. gas plants, etc., is exhibited in its new 'high duty' form, capable of exerting normal pawl efforts up to 14.7 tons. The ability to increase this effort by 50% for short periods is retained, as also is the variable speed control over a commendably wide range, and the new version gives increased accessibility and is of even more robust construction than the earlier types. A commendable new feature is the ability to open up the speed control valve to give rapid rotation of the grate for emptying. This ratchet drive unit has also been manufactured in vertical form for the driving of horizontal shafts as in spreader grates, chain grates, etc. The hydraulic cyclic controller is again a most interesting exhibit, while a new example of centralised hydraulic controls, as employed for many years at British, Dominion and foreign power stations, is on view, and incorporates a new control cabinet. Also exhibited are examples of the well-known Borg & Beck clutches for industrial purposes, Rockford clutches and power take-offs, Purolator metal edge oil and fuel filters for all industrial and marine applications, and a range of Lockheed Avery self-sealing couplings and hoses.

British Oxygen Co., Ltd.

In the welding exhibition the British Oxygen Co., Ltd., exhibit a striking range of products, many of them being demonstrated on the stand. An example is the plate edge preparation machine fitted with multifloat attachment for curve cutting, the 55 in. and 36 in. universal cutting machines and the portable straight-line cutting machine. Portable welding outfits, consisting of blowpipes, regulators and gas cylinders mounted on trolleys, are shown, together with rods and fluxes for welding, building up and hardfacing for most ferrous and non-ferrous metals. Demonstrations showing fabrication and repair work are given. Argonarc process equipment, including the new water-cooled shield with the Mark III torch for heavy duty operation are shown. The C.P.U. 300Q and MG300 power units are used for demonstrations on aluminium alloys, magnesium, copper, stainless steel and heat-resisting alloys. Also shown is the new AWM3 automatic Argonarc machine.



Cutogen hand cutters Nos. 3 and 5, exhibited by the British Oxygen Co., Ltd.

British Thomson-Houston Co., Ltd.

On a smart white stand with blue lettering the British Thomson Houston Co., Ltd., show equipment with a distinctly marine flavour. Exhibits are representative of B.T.H. practice in main electric propulsion equipment, ships' electric auxiliaries, marine radar, and of electric plant for dockyards and general industrial use. These exhibits range from a 12-ton gearwheel as used with geared-diesel propulsion units incorporating B.T.H. electro-magnetic couplings, gas turbine developments, and high-breaking capacity switchgear for marine service, down to electric speed indicators and magnetos for marine engines. The industrial equipment incorporates various types of electric motors and control gear, thrusters, and suds pumps. There is a demonstration of B.T.H. 'Stacreep' (Patented) A.C. crane control, and 'Clearcall' industrial communication equipment is also being shown. Mazda lamps and lighting equipment, in wide variety for marine and industrial use, forms another attractive feature.

The giant gearwheel on the stand of the British Thomson-Houston Co., Ltd.

J. Brockhouse & Co., Ltd.

Among the many types of equipment displayed by J. Brockhouse & Co., Ltd., and their associated companies, the following may be particularly mentioned: Mild steel forgings, forged handrail standards and open type flooring, steel castings, iron castings, hot rolled sections, cold rolled sections, acid resisting castings, aluminium alloy castings, railway ironwork and buffers, machine tools and small tools, anvils and vices.

Brookhirst Switchgear, Ltd.

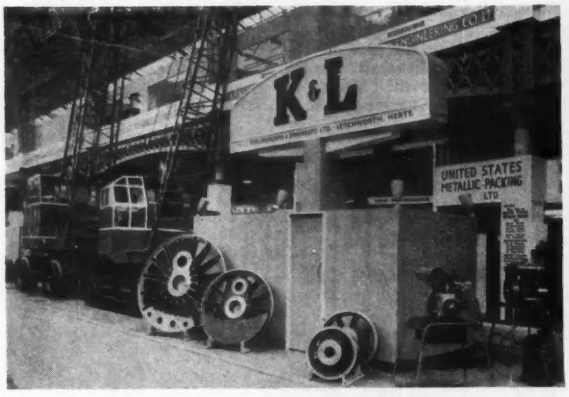
Brookhirst Switchgear, Ltd., exhibit a comprehensive selection of completely new designs of A.C. and D.C. motor starters for industrial and marine service; hand-operated and automatic starters of various types, for wall or floor mounting, are included. The underlying principle of these new models is extreme adaptability, the basic components being so designed that from them there can be provided readily a great variety of combinations and also variety within each combination. The principal basic components, which are specially displayed, are 'channel-sprung' contactors, edge-pivoted thermal overload relays, broad-base solenoid overload relays, and U-pack isolating switches. Provision is made also on standard equipments for the inclusion of many extra features. A selection of accessories such as pushbuttons, limit switches, and control switches is also shown, and a particular exhibit is a typical section of Brookhirst 'Unibord' (unit-built) motor control equipment. This recently developed design is a sturdy metal-clad control board, built up entirely from standard busbar mounting units.

Broom & Wade, Ltd.

In addition to a wide range of pneumatic tools, Broom & Wade, Ltd., exhibit several types of compressor. The latest of these is the SV.220. This portable, sleeve-valve air compressor plant is of the water-cooled V type, consisting of four cylinders arranged in two banks of two cylinders, and is driven by a 5 L.W. Gardner, five-cylinder diesel engine developing 65 B.H.P. Actual delivered capacity is 210 cu.ft. of free air per minute at 100 lb. per sq. in. pressure when running at 1,200 R.P.M. The plant is mounted on an all steel frame chassis of rigid design, with sprung axles and pneumatic tyred wheels, and is fitted with mud guards on rear wheels and provided with draw bar and full trailer equipment. Stationary air compressors on show included the following types: TS2X, capacity 1,000 cu.ft. of free air per minute at 100 lb. per sq. in. pressure, EH.255, 600 cu.ft., D.23, 200 cu.ft., EP.660, 100 cu.ft., and TN.20.

John Brown & Co., Ltd.

One of the exhibits particularly worthy of note on the stand of John Brown & Co., Ltd., is a scale model of the 700 kW. closed cycle gas turbine now under construction at Clydebank



On the left, the exhibit of K. & L. Steelfounders & Engineers, Ltd., and on the right, that of George Cohen, Son, & Co., Ltd.—both members of the 600 Group of Companies.

tor the utilisation of waste heat. The actual turbine rotor for the plant is also on show. The same stand has an impressive model of a pulverised fuel-fired boiler for B.E.A., producing 360,000 lb. of steam per hour at 940 16/m2 and 920° F.

George Cohen, Sons & Co., Ltd.

A most interesting range of metal-working machines grace the stand of George Cohen, Sons & Co., Ltd. Most of these are somewhat outside the gas industry's sphere of interest, but we might draw attention to the remarkable Coborn combined punching, shearing, cropping and notching machine. This combined unit is fabricated from 2 in. mild steel plate, reinforced with 2½ in. thick spacer plates. An ingenious clutch arrangement allows for separate control to shearing and punching ends of the machine. The handwheel enables the punch to be brought down on to marked position to ensure accurate punching. Notching tools are provided for Vee and square notching. The angle blades supplied for cropping enable the section to be cut either square or up to 45 degrees on the mitre.

Comet Pump & Engineering Co., Ltd.

A speciality of the Comet Pump & Engineering Co., Ltd., is the manufacture of 'pumps handling matter which is considered to be absolutely unpumpable.' The equipment on show on this excellent stand includes totally reversible pumps extracting from vacuum vessels, pumps for sugar, marine pumps, pumps showing total load insulation, general purpose pumps, metering pumps, armoured glass pumps, steam-jacketed bodies and steam-jacketed covers.

Consolidated Pneumatic Tool Co., Ltd.

Portable power tools form the main display on the Consolidated Pneumatic Tool Co., Ltd., stand. The range exhibited includes both pneumatic and electric models. Of particular interest is the display of Hicycle electrical tools, the modern production machines which include drills, grinders, nutrunners, screwdrivers, in all sizes and speeds. So large is the variety of pneumatic tools produced by C.P. that no attempt can be made to list them all in this brief description. Visitors, however, are able to see representative examples of each type from pneumatic hammers, chippers and scalers, to drills, grinders and wrenches, etc., for almost every conceivable operation in a wide field of industry.

Crossley Brothers, Ltd.

Occupying two large adjacent island stands, Crossley Brothers, Ltd., exhibit their magnificent diesel engines, painted a uniform pale grey. Four exhibits are shown on one of the stands, comprising diesel power units up to 3,000 B.H.P. for marine, locomotive and stationary purposes. On the second stand are shown three large working models, including a Crossley-Premier 16-cylinder, 2,600 B.H.P. generating set. The Crossley-Premier vis-á-vis oil engine on the other stand is a quarter-scale model of the four-cycle generating set, in part section. The engine is essentially of slow-speed heavy duty type, yet on account of the vis-á-vis design and centrally located generator provides a compact and competitive power unit of the utmost reliability. The cylinders on either side of the crankshaft are in line with each other, and the pistons are operated through connecting rods whose large-end bearings are of a unique design patented by Crossley-Premier. The vis-á-vis design with centrally located mass provides an engine free from any detectable torsional oscillation within the whole of the running speed range. Four films are shown in the cinema theatre.

Darlington Insulation Co., Ltd.

The Darlington Insulation Co., Ltd., manufactures high quality thermal insulation materials in various forms, and on the stand there is a special section devoted to the new special duty extra high temperature insulation 'Refrasil,' for which this Company has recently been appointed the sole agents for Europe, Commonwealth and the British Isles. A display of photographs and illustrations on methods of application and the use of the various materials is also shown. There are also displays of the products of the various associate companies. Messrs. S. T. Taylor & Sons, Ltd., are showing some of their sheet metal fabrications and samples of sound insulation panels, and Messrs. Joinery & Insulation Co., Ltd., are showing samples of superfreezer doors and the construction of sectional cold rooms.

Davey, Paxman & Co., Ltd.

Two stands form a joint exhibit of the products of Davey, Paxman & Co., Ltd., of Colchester, and Ruston and Hornsby, Ltd., of Lincoln, and include a 12-cylinder Vee type diesel engine coupled to a B.T.H. generator for rail traction work of 1,500 B.H.P. The unit is also suitable for industrial and marine duties. Other exhibits include: A 6-cylinder marine propulsion Vee type diesel engine with rev. red. gearbox, 200 B.H.P.; a 6-cylinder marine propulsion oil engine of 335 B.H.P.; a 6-cylinder marine propulsion oil engine of 112 B.H.P.; a gas turbine full scale model with alternator, 750 kW.; a marine auxiliary oil engine, 170 B.H.P.; a 10-ton diesel locomotive, narrow gauge, 75 B.H.P.; a sectional engine, 75 B.H.P.; a sectional engine, 22½ B.H.P.; a diesel pumping set for irrigation duties; and a model of 1,600 B.H.P. marine propulsion engine. Models of horizontal and vertical steam boilers are also on show, together with a model of 28-ton diesel shunting locomotive.

Dewrance & Co., Ltd.

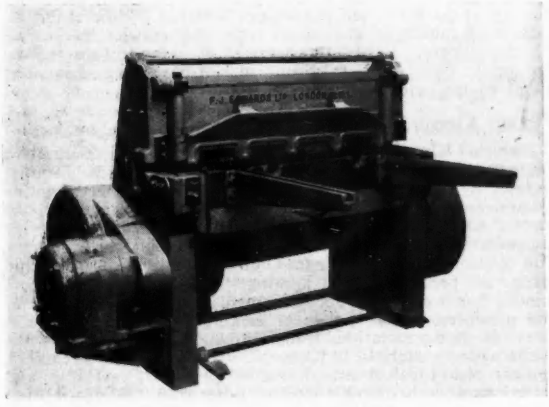
Valves of many types comprise the main exhibits on the Dewrance & Co., Ltd., stand, some being cut in section to show the internal construction. There is also a demonstration unit of the Dewrance-Yarway impulse steam trap; the trap and piping are made in clear perspex, enabling the action of the valve to be observed when under pressure. Another combined demonstration unit shows the Dewrance-Yarway remote liquid level indicator, Dewrance patent bicolour illuminated water level indicator, and Dewrance high and low water whistle alarm, external type. Also shown are Dewrance-consolidated full lift safety valves with thermodisc valve, 8-in. parallel slide valve of the pressure held cover type fitted with electrically operated valve equipment, the valve being cut to show internal construction, and miscellaneous bronze valves. Boiler mountings for power stations and other installations are also on view.

F. J. Edwards, Ltd.

A wide range of metal working machines, several of which are of new design, are shown on the stand of F. J. Edwards, Ltd. One of the most interesting is the 'Besco' production guillotine shearing machine, illustrated on this page. This is the model 36-10, the smallest in the range of geared machines with a capacity of 36 in. by $\frac{1}{8}$ in. for mild steel. Other machines on view include the following: Production high speed nibbling machine, production inclinable power press, model BA.20 (Mark II), production fabricated steel hand punch, type L, production universal punching, shearing, section cropping and notching machine, type KS.15, production bar cropping machine, type BS.50F, production guillotine shearing machine, and production treadle guillotine. In addition, a selection of popular sheet metal working machines for hand operation, and hand tools from the Besco production standard ranges, including lever shears, punches, bar benders, bench sheet and cone roller, etc., are displayed.

English Electric Co., Ltd.

The exhibit by the Diesel Engine Division of the English Electric Co., Ltd., comprises power units for industrial and rail traction fields. A unit of particular interest is the 38-ton 938 B.H.P., 5SRL type diesel engine which operates at 375 r.p.m. The selection also includes a 4RKD type dual fuel engine alternator and exciter. This 220 B.H.P. engine operates on town, natural, produced or sewage gas, and can be changed from diesel to dual fuel operation while running. The 6-cylinder 'H' type engine, rating 220 B.H.P. at 1,500 r.p.m., is shown as a package type unit and is designed for operation on oil well drilling rigs. The company's traction range is represented by the 16-cylinder turbo-charged 2,000 B.H.P. 'SVT' type diesel engine having a speed range of 420-850 r.p.m. Further exhibits include models and a photographic display featuring other engines. The engines are finished in an attractive grey, making an impressive show.



The 'Besco' production guillotine shearing machine, exhibited by F. J. Edwards, Ltd.

Evershed & Vignoles, Ltd.

Among the several new instruments exhibited by Evershed & Vignoles, Ltd., is the 'Dionic' meter which measures steam purity by the electrical conductivity method, and is used in conjunction with the Evershed-Straub degassing condenser. A representative sample of steam is condensed and the meter measures its electrical conductivity which is proportional to the quantity of inorganic salts and gases dissolved in the steam. The conductivity tube, indicators and recorders are almost identical to the well-known 'Dionic' water purity meter. In the interests of economy, however, the new meter operates with a much smaller water flow and to reduce the effects of electrolysis operates on alternating current. Four platinum electrodes are employed. The degassing condenser referred to above removes non-condensable gases such as ammonia, carbon dioxide and hydrogen sulphide from steam or water so that a gas-free sample may be used for conductivity determination by 'Dionic' methods. These gases, while comparatively innocuous in the superheater and turbines, increase the conductivity reading to many times that due to inorganic salts, and if retained in the water tested, completely mask their effect. Other instruments shown include the 'Dionic' boiler concentration meter, the Evershed circular disc recorder, and the 'Syntorque' rudder indicator.

Fibreglass, Ltd.

On one of the most attractive stands in the exhibition, Fibreglass, Ltd., display all forms of heat, sound, and electrical insulation, but particular emphasis is placed on the many forms of Fibreglass manufactured for heat insulation in the marine field.

Fry's Metal Foundries, Ltd.

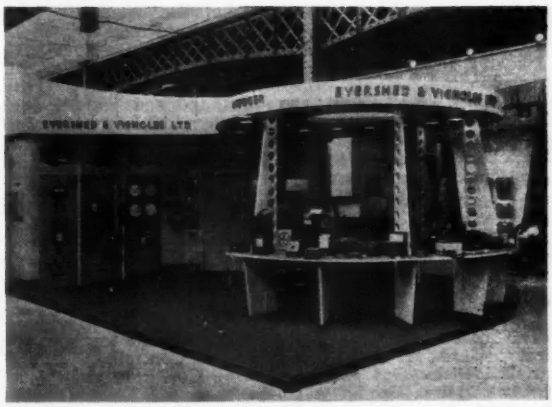
Exhibiting a wide range of solders and fluxes, the Fry's Metal Foundries, Ltd., display includes the following products: Soft solders, high temperature soft solders, fusible solder, etc., and the forms of manufacture—sticks, strip, ingots, rings, washers, tape, solid wire, etc., together with a range of suitable fluxes—'Frysol' soldering fluid, 'Frysol' soldering paste flux, 'Alcho-re' paste flux, 'Alcho-re' soldering fluid, etc., and composite materials—'Fryolux' solder paint, 'Fryolux' pure tin paint, 'Alcho-re' cored solder wire, 'Alcho-re' solder cream, etc. The exhibit emphasises the use of 'Fryolux' solder paint, a comparatively recent development in the field of tinning and sweat soldering. This material provides the means of mass production soldering without recourse to complicated and expensive machinery. Its application is dealt with in some detail and demonstration work carried out; the exhibit includes specimens of soldered articles clearly showing type of joints suitable to give utmost strength with maximum economy.

General Electric Co., Ltd.

On the stand of the General Electric Co., Ltd., welding equipment demonstrated includes the multi-operator welding transformer plant for serving up to six operators, portable welding equipment of both the single operator and twin arc types. Particular interest attaches to the twin arc equipment which represents the latest advance in the design of welding plant and demonstrations show the excellent performance of this equipment. The twin-arc welding unit takes a balanced load from a three-phase supply and operates at a considerably higher power factor than the standard single phase equipments. It possesses also many advantages from the welding standpoint, including increased welding speed, ease of operation, less frequent rod changing, increased stability of the arc, improved finishing of the weld, elimination of shock risk, and a cool electrode holder. The welding set is so designed that it can be used as a double operator set if desired.

General Refractories, Ltd.

Exhibits at the General Refractories, Ltd., stand cover the refractories requirements of all types of industrial furnaces. Basic refractories exhibited include a comprehensive range of magnesite and chrome-magnesite bricks for open-hearth, electric, and reheating furnaces, cement kilns, etc. Specially featured in this section is the exhibit of 'Ferroclad' metal-cased chemically bonded basic bricks in which the steel casing and the brick material are pressed together by hydraulic pressure. Another interesting display is that of the G.R. '341' dolomite bricks, manufactured entirely from British dolomite. Fireclay refractories include the well-known 'Glenboig,' 'Davison' and 'Foster' ranges for boilers, locomotives, cement kilns, blast furnaces, hot blast stoves, and industrial furnaces generally. Refractories for all types of suspended wall and roof construction are also displayed. Of particular interest is an exhibit



The Evershed & Vignoles, Ltd., stand.

of 'Amberlite' heat insulating products in which their function in reducing heat losses in furnace structures with resultant fuel economies is demonstrated. A full selection of high alumina, sillimanite and carbon refractories is exhibited, together with many examples of fire cements, jointing materials and monolithic compositions.

G. A. Harvey & Co., Ltd.

The list of products manufactured by G. A. Harvey & Co., Ltd., is a very long one. It ranges from the smallest high pressure autoclaves for 3,000 lb. working pressure, up to fractionating columns weighing 220 tons, and gas oil separators made from 3 in. thick mild steel plate 4 ft. 6 in. diameter and 170 ft. long. The range of gilled tubes, displayed in varied diameters and pitch of gills, and photographs of other plant and equipment portray the positive ability of this company to cater for the requirements of the engineering and marine engineering industry. Components necessary in the fabrication of high pressure vessels and steel platework generally have for many years occupied the attention of this company, who supply a complete range of 'Harco,' 'Rotarprest' heads, dished and flanged ends, channel, angle and flat bar rings. An outstanding exhibit in this connection is the display of cold rolled rings, flash butt welded, which are an indication of the type of work produced. Other exhibits include many types of perforated metals, woven wire cloth, and steel office equipment.

Hilmor, Ltd.

Among the comprehensive range of tube-bending machinery exhibited by Hilmor, Ltd., are lightweight bench fixture and portable models for the general engineer, plumber, electrician and gas fitter, and hand- and power-operated rotary hydraulic machines for bending heavy gauge gas and steam tube. The hand operated and motorised mandrel type benders developed by Hilmor, Ltd., are of particular interest to all manufacturers concerned with the production, cold and without filling, of uniformly accurate full bore bends on extra short radii. These machines, together with several new models introduced for the first time at this exhibition, are demonstrated daily, and skilled operators are in attendance on the stand to give any information or assistance required in connection with tube bending.

James Howden & Co., Ltd.

Products exhibited on the stand of James Howden & Co., Ltd., include the following: Mechanical draught fans for land and marine steam-generating installations, including forced and induced draught fans, exhauster fans, secondary air fans, etc., mine ventilation fans, sinter fans, Howden-Ljungstrom rotary air preheaters for land and marine purposes, multi-vortex and Centicell dust collectors, vortex dust collectors (wet and dry types) for marine purposes, Howden-Lysholm rotary compressors, steam engines and turbines for auxiliary purposes, furnace fronts, 'Instanter' quick-closing sluice valves, Silley fasteners and roller-bar hinges for smoke-box doors.

Imperial Chemical Industries, Ltd.

On two stands which do nothing to detract from their enviable reputation for excellent stand design, I.C.I. display the products of their metal division and plastics division. The former includes: Condenser tubes in 'AE' cupro-nickel, 'Alumbro' (aluminium brass), Admiralty brass and 70/30 brass (of special interest is the display of 'Alumbro' condenser tubes withdrawn from R.M.S. 'Aquitania' after 20 years' perfect service); domestic copper tubing, 'Kuterlon' copper tubing for underground water supplies and Fyffe's 'DD,' 'Conecor,' 'Instantor' and 'Intex PT' fittings; plate, sheet, strip, tube, rod, wire and extrusions in copper and copper base alloys; plate, sheet, strip, extrusions and rod in 'Kynal' aluminium and aluminium alloys; 'Kutern' high speed turning copper rod, 'Kumium' for welding tips, etc.; 'Kumanal,' an electrical resistance alloy; and 'Everdur' where strength and corrosion-resisting properties are required.

The plastics division stand shows, in particular, the uses of 'Perspex' acrylic sheet in the electrical trades, the application of 'Alkathene' film for the protection of engineering equipment, and the uses of 'Alkathene' and rigid polyvinyl chloride for fabricating acid resistant plant.

The Incandescent Group

The Incandescent Group, which comprises the Incandescent Heat Co., Ltd., Metalectric Furnaces, Ltd., Controlled Heat and Air, Ltd., Selas Gas and Engineering Co., Ltd., and Metal Porcelains, Ltd., exhibit a complete range of photographs, illustrated by models covering metallurgical furnaces and ancillary equipment for all industries, fired by solid fuel, gas, oil and electricity. This includes complete vitreous enamelling, bright brazing and annealing, galvanising, normalising, hardening and tempering, gas carburising, malleableising plants, complete mechanised sheet and strip rolling mill equipment, foundry equipment, arc melting furnaces, induction heating equipment, continuous and static drying ovens for all processes, including tin printing, core and paint drying, gas and oil burners, valves, air-gas mixing apparatus, aluminium melting, laboratory heating equipment, vitreous enamel frits, oxides, etc.

Keith Blackman, Ltd.

Space precludes mention of all eight exhibits on the stand of Keith Blackman, Ltd., and we have therefore selected two as being of principal interest to readers.

The 20 in. type 8 'Tornado' blower is of the two-stage type, with cast iron construction, and is suitable for pressures up to 28 in. w.g. (1 lb. per sq in.). It is direct driven by a Keith Blackman A.25 motor, and is suitable for air blast to Smith's hearths, air service to low pressure oil fuel and gas-fired furnaces, cooling, drying, fume ejecting, etc.

The 30 in. cooling fan is powered by a Keith Blackman A.24 motor and is one of a size range from 15 in. to 42 in. dia. It has an approximate volume of 9,500 c.f.m., and air velocity measured at the centre of the air stream, and at a distance of 10 ft., of 850 ft. per minute. It is used for combating hot spots in iron and steel works, glass works, retort houses, foundries, and boiler houses, and also for accelerated air drying or cooling of products.

K. & L. Steelfounders & Engineers, Ltd.

Three types of crane are featured by K. & L. Steelfounders & Engineers, Ltd., together with other products. The Jones KL22 crane (2 tons at 8 ft., jib 24 ft. or 16 ft. cantilever) is powered by a diesel engine and is self-propelling. It has solid rubber or pneumatic tyres, rail chassis or lorry.

The Jones KL44 crane (4 tons at 8 ft., jib is 24 ft., alternative jibs up to 50 ft.) is self-propelling, powered by diesel engine, with solid rubber or pneumatic tyres, and crawler tracks, rail chassis or lorry. Lastly, the Jones KL66 crane (6 tons at 9 ft., jibs up to 60 ft. available) is also self-propelling, driven by diesel engine, and is mounted as for the KL44.

Richard Klinger, Ltd.

Richard Klinger, Ltd., exhibit jointings of compressed asbestos in sheet or precision-cut gasket form as follows: 'Klingerit' compressed asbestos, high pressure sheet jointing for universal application at the highest temperatures and pressures; 'Klingerit 1000' wire reinforced c.a. sheet jointing for the pulsating pressures and temperatures of spark and compression ignition engines; 'Klinger-Oilit' solvent, hydrocarbon and refrigerant proof c.a. sheet jointing; 'Klinger-acidit' c.a. sheet jointing for organic and inorganic acids at highest temperatures and pressures; 'R.K.' c.a. sheet jointing for medium temperatures and pressure; various ready-cut gaskets, washers and joints in the above materials. 'Klingerflow' and Klinger streamline seatless piston valves are shown in gunmetal, cast iron and forged steel, with stainless steel or other trim, 'Klingerit' disc for disc valves, and 'Klingerit' valve rings are also displayed.

Klinger 'sleeve-packed' cocks for many purposes, including diesel indicators, and reflex and plate glass water level gauges are included on the stand.

Lawler, Ayers & Co., Ltd.

On the Lawler, Ayers & Co., Ltd., stand the complete range of 'Tubela' pipe bending machines are exhibited and demonstated by qualified operators. A new hydraulic model H.3 machine is also exhibited, having a capacity up to 3 in. diameter. Among the range of copper tube bending machines shown is a new ratchet machine which will deal with copper tube and conduit 1¼ in.-2 in. diameter. Other machines cover practically the complete range of copper and conduit bending. Among the range of 'Laco' specialised cutting tools shown is the new universal hole cutter designed to cut holes from ¾ in. to 5 in. diameter in practically any material plain or corrugated; in addition this tool will act perfectly as a hacksaw or file. Among the hand tools are shown hinged type pipe vices and stands and also pipe vices of the chain variety.

Le Bas Tube Co., Ltd.

The products shown by the Le Bas Tube Co., Ltd., on their smart red and cream stand consist of a wide variety of samples from their extensive pattern range of well-known GF malleable iron fittings for use in water, gas, steam, air and oil pipe installations. GF fittings are screwed British standard pipe

thread and are individually tested to a hydraulic pressure of 360 lb. per sq. in., and are suitable for water pressures up to 200 lb. steam up to 150 lb. and are supplied both black and galvanised. Also displayed are examples of fabricated steel pipework of their manufacture for power, heating, cooling purposes, etc. Examples are also shown of cold drawn and electrically welded mild and stainless steel tubing, which are stocked and distributed by this company.

Metallizing Equipment Co., Ltd.

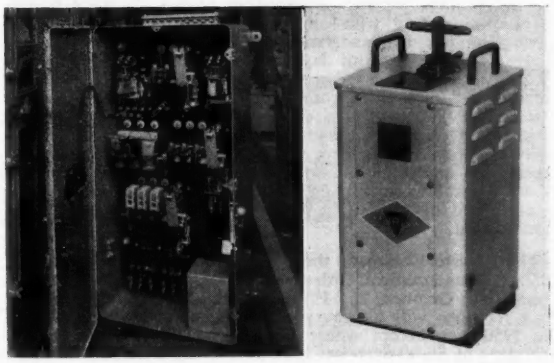
The Metallizing Equipment Co., Ltd., well known as manufacturers of metal-spraying equipment, accessories and supplies, show some new plant and processes for the first time. Exhibits range from a small gun using only 10 cu.ft. air per minute to very fast and efficient production tools. Actual spraying demonstrations, with experts available to give the latest information on all aspects of metallizing are shown, and a new process—using wire that 'bonds itself' to unprepared steel—and fused-on hard-surfacing coatings are demonstrated.

Morgan Crucible Co., Ltd.

The Morgan Crucible Co., Ltd., stand is devoted mainly to a display of crucibles, foundry accessories, and crucible furnaces. A selection of 'Salamander' crucibles and foundry accessories show the wide diversity of products manufactured in these materials. Of particular interest to all foundrymen is the showing for the first time of the latest addition to the range—the 'Salamander Suprex' crucible—developed for use in specially arduous conditions. Among the crucible furnaces on show is the recently developed power tilted central axis furnace, type CA/MECH. This furnace is also being exhibited for the first time; the rotary crucible furnace, type RCF, is also displayed. In addition, a newly developed super-duty refractory, the Morgan M.R.1 refractory, is shown, and other exhibits include 'Morganite' carbon engineering components and 'Reservoil' oil-retaining bearings.

Murex Welding Processes, Ltd.

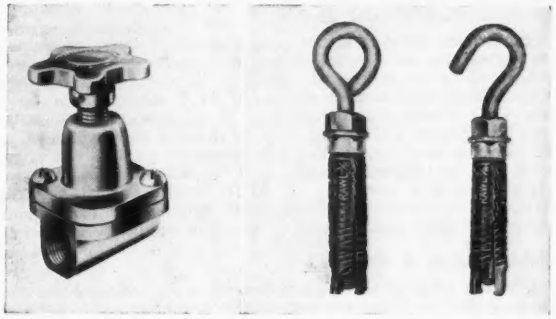
Several new exhibits are shown on the Murex Welding Processes, Ltd., stand. One of these is the Murex 50 amp. transformer set, which is self-contained and air cooled. It has a current range of 20 to 50 amp. at 90 volts open circuit and as the set is of the moving coil type, the range is infinitely adjustable, i.e. any current between the above minimum and maximum values can be obtained. The unit is suitable for connection to a 200/230 volt single phase supply or to two phases of a 400/440 volt three phase supply. It is primarily intended for sheet metal work, but it will also be found useful for tacking purposes. The equipment is provided with carrying handles. Also shown is a newly designed 250 amp. transformer equipment, a recently developed low voltage device for A.C. welding equipment, the Elin-Murex automatic welding equipment, and some new types of electric arc welding electrodes. The exhibit is completed by a display of Murex arc welding electrodes, the range of which now covers over 70 different types, and displays of arc welding accessories and Murex welding literature. Practical demonstrations in both manual and automatic arc welding are given.



Left: the standard Brookhirst 'Stator-Rotor' starter. Right: Murex 50 amp. transformer arc welding equipment.

Ransomes, Sims & Jefferies, Ltd.

An interesting range of electric trucks, all finished in a pleasant deep red, is exhibited by Ransomes, Sims & Jefferies, Ltd. The trucks shown are as follows: A forklift 10 battery-operated electric fork truck, 10-cwt. capacity at 15 in. load centres, 9 ft. lift; forklift 20 battery-operated electric fork truck, capacity 1 ton at 18 in. load centres, 10 ft. maximum lift and arranged with free-lift mast giving 5 ft. 3 in. free lift; a forklift 40 battery-operated electric fork truck, 2 tons capacity and 18 in. centres 10 ft. maximum lift; type ENU8 2-tons capacity, 4-wheel steer platform truck elevating platform, 5 ft. long by 2 ft. 2 in. wide by 11 in. high above ground, 4½ in. lift; and a type T.E. tractor, 20/30 cwt. towing capacity.



Left: A Saunders diaphragm valve for the smaller pipeline. Right: Examples of 'Rawlbolts.'

Rawlplug Co., Ltd.

One of the most interesting exhibits on the stand of the Rawlplug Co., Ltd., is the type of metal expansion bolt known as a Rawlbolt. These Rawlbolts are made in two types and constitute an inner bolt with an outer shell made up of four segments. A hole to receive the bolt is bored in the material with a masonry tool such as a Stardrill or Durium drill and the bolt dropped in. On tightening, the action is to draw a wedge shaped nut into the shell thus forcing the segments against the side of the hole until they are tight. The strength of the fixing is as great as the strength of the material or the bolt whichever is the weakest. As there is no grouting in or waiting for cement to dry machinery can be put into operation as soon as fixed. Rawlbolts are also supplied with studding, hooks and eyes and pipe clips to cover all varieties of floor, wall and ceiling fixings.

Reavell & Co., Ltd.

On the stand of Reavell & Co., Ltd., a new range of air compressors is shown, including single stage and two stage air-cooled and water-cooled units for pressures up to 100 lb. per sq. in. and capacities up to 400 cu. ft. per minute. There is also a four-stage compressor for 300 atmospheres, a two-stage double-acting vertical compressor of 1,500 cu. ft. capacity, one of the well-known quadruplex compressors, some two-stage compressors for 150, 450, 600 and 1,000 lb. per sq. in. and rotary compressors of various types. The Reavell 'Askania' regulator is also shown, and two types of rotary air engines for starting interval combustion engines.

Rozalex, Ltd.

The products of Rozalex, Ltd., require little description since they are already widely known in industry. Suffice it to say, therefore, that products shown on their stand include barrier preparations to protect the skin against contact with industrial irritants, Rozalex ointments to recondition the skin and maintain it in a healthy condition, while the Rozalex dispenser ensures economy and an uncontaminated supply of Rozalex to each person. Technical advice is available on all occupational dermatitis problems based on over 20 years' experience and research.

Rubery Owen & Co., Ltd.

Making good use of the Festival symbol on their attractive stand, Rubery Owen & Co., Ltd., exhibit the following products: Steel storage equipment such as shelving, racks, cupboards, pallets; steel industrial workshop equipment—clothes lockers, wardrobe cupboards, tool lockers, service counters, packing benches; steel office furniture—administrative desks, filing cabinets, typists' desks, drawing office tables, plan files, etc.; bolts and nuts—bright, black cold headed and stainless steel; machine repetition parts, hydraulic valve gear; pressings (including stainless steel sinks and wash basins), steel flat and crown-faced pulleys, vee pulleys; and a fork lift truck for materials handling.

Saunders Valve Co., Ltd.

A good idea of the scope of the Saunders Valve Co., Ltd., stand is provided by the selection of sizes exhibited. The Saunders principle of closure by means of a flexible, impervious, isolating diaphragm is available for all sizes of pipeline from ¼ in. to 14 in. The smallest of these is shown in its standard diecast form and a 10 in. model, typical of the larger valves, is embodied in the pressure controlled demonstration unit. Screwed and flanged models, angle and straight bodies, bib end and hose coupling valves, are shown in different sizes, materials and finishes.

Handwheel, lever, pressure- and chainwheel-operated valves are represented as well as various alternatives to the standard bonnet such as padlocked handwheel, sealed bonnet, ball thrust heads, extended spindle handwheel and indicator bonnets. linked with the valve exhibit in the most practical manner, by delivering the fluid flowing through the live display, are two 1½ in./2 in. Safran self-contained pumps. Powered by ⅓ H.P. motors and running at 1,430 R.P.M., each unit delivers 2,280 gall. per hour at 10 ft. head. The pumps are vertically mounted and investigation reveals the very small footing needed to accommodate the rigid bulkhead.

Siebe Gorman & Co., Ltd.

Drawing some of the biggest crowds in the exhibition, Siebe Gorman & Co., Ltd., give underwater demonstrations in glass-windowed tanks of diving apparatus and other underwater equipment, including underwater lamps and telephones designed on the loudspeaking thermionic system. Also shown are air compressors, self-contained breathing apparatus of oxygen and compressed air types for use in ships, mines, fire services, chemical works, etc. 'Norvox' and 'Novita' oxygen resuscitation apparatus for partial drowning, asphyxia, electric shock, etc.; and smoke helmets, gas and dust masks, goggles, and other protective devices.

Standard Telephones and Cables, Ltd.

The focal point of production engineers on the Standard Telephones and Cables Ltd., stand is two models of their new electro-gas equipment suitable for brazing, annealing, hardening and soldering, on view for the first time. One model demonstrates the use of this unit for the production brazing of tricycle frames and the other, which may be operated by visitors, shows various types of burners, singly and in arrays. The equipment uses town gas and compressed air and is electrically controlled and timed. The basic aim of the Stanelco' exhibits is to show that there are various methods which may be used to provide quick localised heat in the production line. Also shown are radio frequency generators, both dielectric and induction, and resistance machines. The latter may be seen in operation and are used for soft soldering and light brazing. Included with the machines is a range of resistance hand tools, wire jointers and toggle presses, together with numerous samples showing successful applications of 'Stanelco' equipment.

Stewarts & Lloyds, Ltd.

For the first time at a public exhibition, Stewarts & Lloyds, Ltd., show their electric resistance weld boiler tubes which, it is claimed, are equal to and, in some respects, superior to seamless tubes, and have been approved for use in both smoke and water tube boilers. The fine surface finish of these tubes makes them particularly suitable for use in boilers and, by a novel arrangement of lights and mirrors, the exhibit allows a close examination of the interior finish. Also featured are a series of colour transparencies illustrating sequences in the manufacture, protection and laying of large diameter steel mains, samples and photographs of bituminised glass-tissue wrapping and bitumen lining for small diameter tubes, typical manipulated pipework (incorporating the use of the Dawson joint) for power stations and high pressure purposes, 'Victaulic' joints and 'Viking Johnson' couplings, steel tubes and fittings manufactured to B.S. 1387, welding fittings, etc. Tubewrights, Ltd., the S. & L. subsidiary specialising in the design and manufacture of tubular steel structural work, also have exhibits of particular interest.

Thomas & Bishop, Ltd.

The various 'Flexo' products of Thomas & Bishop, Ltd., are well to the fore on their attractive stand. 'Flexo' belt treatment keeps all belts in perfect condition and ensures efficient transmission. It enables any belt to run slack without slip at full load. 'Permac,' the original metal-to-metal jointing, makes permanent leakproof joints for steam, gas, water, petrol, etc., and will stand up to all temperatures and pressures. 'Flexo' tinning compound cleans and tins all dirty metals in one operation without filing or scraping. Some other specialities are—kneadable metallic packing, furnace cements, cored solders, 'Flexo' jointing paste, black bituminous paint and water-softening compound.

John Thompson, Ltd.

John Thompson, Ltd., exhibit a section of a water tube pressure vessel, which is 15 ft. long, 4 ft. 6 in. diameter and 3½ in. thick it is longitudinal seam union melt welded, and circumferential seam hand welded. The de-superheater unit is an example of the standard of hand welding carried out by this firm, and there is also a specimen of aluminium welding. Also exhibited are waste heat boilers, one being suitable for using in conjunction with diesel engines, a superheater element, economiser element, section of a header, a heavy end showing section through weld and branches. The John Thompson 'Beacon' open-type flooring and laddering used on this stand is also of welded construction.

C. C. Wakefield & Co., Ltd.

Well known as producers of high quality industrial and marine lubricants, C. C. Wakefield & Co., Ltd., exhibit the following oils and greases: 'Coral' marine engine oils; 'Cresta' steam cylinder oils; 'Deusol' engine oils; 'Alpha' gear oil; 'Solubriol' soluble cutting oils; 'Varicut' and 'Magna' neat cutting oils; 'Hyspin' machine oils; 'Perfecto' turbine oils; 'Icematic' refrigeration oils; 'Spheerol' ball-bearing greases. In addition, an extensive range of Wakefield mechanical lubricators and lubricating accessories for industrial and marine use are exhibited, which cover the application of both grease and oil.

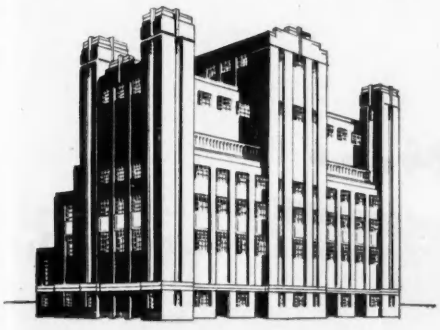
Yorkshire Copper Works, Ltd.

The Yorkshire Copper Works, Ltd., exhibit a remarkably wide range of tubes and fittings. We cannot do better than list them in full: 'Yorcalbro' tubes for marine condensers, air and oil coolers, compressor inter-coolers, salt water calorifiers and drain coolers; 'Yorcalbro' and 'Yorcunife' salt water pipes; 'Yorcalbro' and 'Yorcoron' condenser tubes for power stations; 'Yorkshire' tubes for the oil and sugar industries; 'Yorcalbro' tubes and 'Yorcasal' fittings for hot and cold salt water services; 'Yorkshire' standard fittings, special solder fittings, 3 in. and 4 in. fittings, high duty fittings and fittings for use with fractional o.d. size tubes for every application, including domestic engineering, steam, refrigeration and heating services; Calor gas installations; hydraulic compressed air and general engineering pipelines.

STREET WORKS CODE

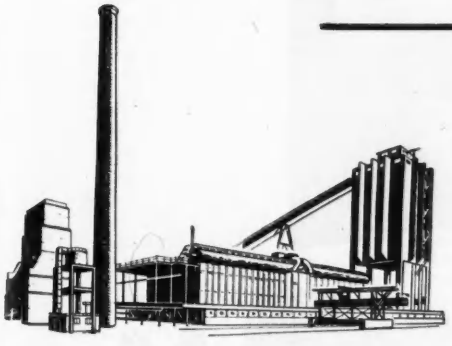
The provisions of the Street Works Code contained in Part I of the Public Utilities Street Works Act ,1950, and the Code in Part II of that Act, came into force on April 26 last in so far as relations between undertakers having statutory powers to place and deal with apparatus in streets and authorities having control or management of streets were governed entirely by public general legislation which was not modified by any local enactment incorporating or applying it, but was incorporated or applied completely and without change. The Minister of Transport was empowered by Sections 15 and 24 of the 1950 Act to appoint a date for bringing these provisions of the Act into force where the relations between undertakers and authorities were governed in any other way—that is, by a local enactment or by a public general enactment as incorporated or applied in or by a local enactment with any modification.

The Minister has made the Public Utilities Street Works Act. 1950, (Commencement Order), 1951. (S.I. 1951 No. 1555 (C.7)) appointing October 26, 1951, as the date. After then, all such relations will be governed by the relevant provisions of the 1950 Act, except where the Minister (or in Scotland the Secretary of State) exercises his power under the Sixth Schedule of the Act to make orders saving any protection afforded by the legislation which the present Order supersedes. The Minister and the Secretary of State consider that such orders should be made only where circumstances peculiar to certain works or localities, or similar unusual features, justify the preservation of some exceptional protection or measure of control. Copies of the Order can be purchased from H.M. Stationery Office, price 2d.



SITE WORK IN PROGRESS

- ★ ABERDEEN
- ★ ALDERSHOT
- ● ANKARA
- ★ ASCOT
- ● BATH
- ★ BILSTON
- ★ BIRKENHEAD
- ★ BIRMINGHAM, NECHELLS
- ★ BIRMINGHAM, SALTLEY
- ● BIRMINGHAM, SWAN VILLAGE
- ★ BIRMINGHAM, WINDSOR ST.
- ★ BOLTON
- ★ BRADFORD
- ● BRADFORD
- ● BRIGHTON
- ★ BURGESS HILL
- ★ CAMBRIDGE
- ● CHELMSFORD
- ★ CHESTER
- ● CLACTON
- ★ CLECKHEATON
- ● CROYDON
- ● DERBY
- ★ DONCASTER
- ★ DUNDEE
- ★ DUNFERMLINE
- ★ EAST DEREHAM
- ★ EDINBURGH
- ● EDINBURGH
- ★ ELLAND
- ★ ELY
- ★ GLASGOW, PROVAN
- ● GREENOCK
- ★ GRIMSBY
- ★ HARWICH
- ★ HESSLE
- ★ HINCKLEY
- ★ HYDE
- ★ IPSWICH
- ★ IRVINE
- ★ LANCASTER
- ★ LINCOLN
- ★ LONDON, BOW COMMON
- ★ LONDON, FULHAM
- ● LONDON, KENSAL GREEN
- ★ LONDON, POPLAR
- ● LONDON, WANDSWORTH
- ★ LOUGHBOROUGH
- ★ MALVERN
- ● MANCHESTER PARTINGTON
- ★ MARCH
- ★ MELTON MOWBRAY
- ★ NEWMARKET
- ★ NEWTON-LE-WILLOWS
- ● NEWQUAY
- ★ NOTTINGHAM
- ★ OLDHAM
- ★ OTLEY
- ★ PENZANCE
- ● PENZANCE
- ★ PETERBOROUGH
- ★ POOLE
- ★ PRESCOT
- ★ RAMSGATE
- ★ READING
- ● READING
- ★ REDDITCH
- ★ ROCHDALE
- ★ ROWLEY REGIS
- ★ SHEFFIELD
- ★ SHIPLEY
- ★ SHREWSBURY
- ★ SIDMOUTH
- ★ SILSDEN
- ★ SMETHWICK
- ● SMETHWICK
- ★ SOLIHULL
- ★ SOUTHALL
- ★ SOUTHAMPTON
- ● SPALDING
- ● STAMFORD
- ★ STOURBRIDGE
- ★ STOCKPORT
- ● SUDBURY
- ● TINGLEY
- ● TIPTON
- ★ TOTTENHAM
- ● TOTTENHAM
- ★ WALSALL
- ● WALSALL
- ● WARRINGTON
- ★ WELLINGTON (SALOP)
- ★ WESTON-SUPER-MARE
- ★ WISBECH
- ★ WOLVERHAMPTON
- ★ WORCESTER



- ▲ APPLEBY-FRODINGHAM (SCUNTHORPE)
- ■ BARROW-BARNSLEY
- ■ BEDWAS
- ▲ COLVILLES (GLASGOW)
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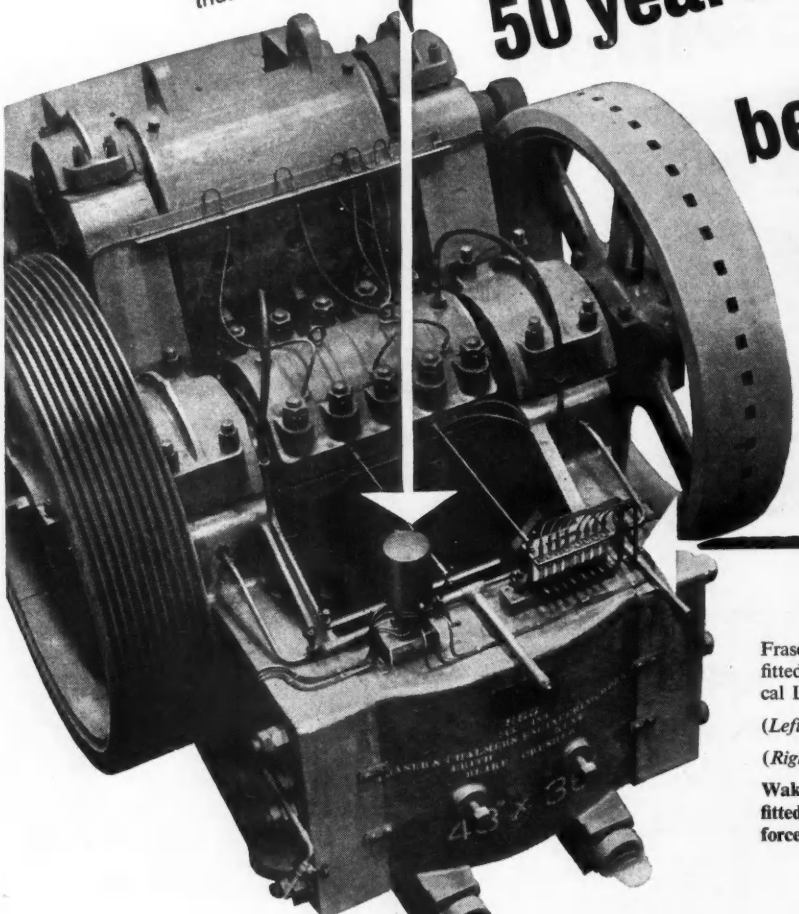

Fraser & Chalmers' 48″ x 36″ Blake Crusher fitted with two types of Wakefield Mechanical Lubricator.

(*Left*): *2G Grease Lubricator.*

(*Right*): *DP Sight Feed Oil Lubricator.*

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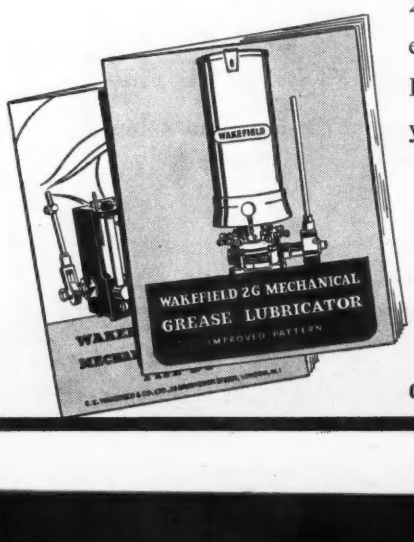

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Are the Croydon Showrooms Ostentatious?

S.E. Consultative Council Discusses Board Expenditure

AT the lengthy meeting of the South Eastern Gas Consultative Council at the Goring Hotel, London, S.W., on September 4, no item produced a more energetic discussion than that relating to the Park Lane showrooms at Croydon.

The matter was raised as a result of a consumer's complaint concerning expenditure incurred in equipping the showroom in a style too lavish for a nationalised and non-competitive industry. Following discussion on the subject at a recent meeting of the East Surrey District Committee, the matter had been referred to the Board, whose Deputy Secretary had explained that the former company was prevented from completing the showroom by the outbreak of war. The scheme had been approved by the Board and also by the Ministry of Works.

The original criticism was received sympathetically by several Council members. 'It would have been better,' said one, 'to have made a patched-up job of it, as its moral effect on passers-by is extremely bad.' Another felt that a 'closed industry' should take great care to avoid possible public criticism. In this case the expenditure could have been avoided had the Board exercised more discretion. A third pointed out that, after all, this was the Board's headquarters.

Effect on Price of Gas

The crux of the matter was agreed to be the effect, if any, of this expenditure on the price of gas. In this connection it was remarked by one member that when the Milk Marketing Board erected its huge building in Surrey, its cost had been equal to one-tenth of a farthing per gallon of milk for one year. If the effect of the work done on the Park Lane showrooms had that sort of effect on the price of gas, it was worthy of consideration.

Eventually, it being realised that the Board may have been committed in some way, inheriting an obligation to complete the building in the style originally planned, it was determined to send the Council's views to the Board for their consideration and further explanation.

This was but one item on a list of 12 letters under discussion. The first of these was a reply from the Board's Commercial Manager relating to a consumer's complaint from the Crowborough district regarding terms and conditions for supply of gas. The consumer had objected to being held responsible for damage to equipment 'from any cause whatsoever,' and it was agreed by certain members of the Council that the agreement was 'heavily weighted against the consumer.' They felt that that there was a degree to which a consumer should be held responsible for damage.

Another criticism concerned the Board's terms for hire of 'loan' cookers. Consumers owning cookers which required to have the ovens relined or some similar repair, were compelled to hire a cooker while their own appliances were being rectified. This, in the view of the Council's correspondent, was unfair. The Board's Commercial Manager had informed them that there was no standard charge for hiring a cooker, but the Council gathered that the charge, which might be in the region of 30s. or £2, was a fixed amount, irrespective of the time taken to repair the original cooker, a period of about two to three weeks. The Council, while generally approving the imposition of some such charge, urged that the Board investigate the situation with a view to making a standard charge throughout the area, and then give adequate publicity to the fact.

This complaint emanated from the North Cheam district as did another concerning the smoke nuisance in Sutton High Street. A letter had been received from the Chief Engineer at the local works, explaining that every precaution was taken to keep smoke and dirt emanation to a minimum, and this the Council accepted.

Public Welcome

From the Cheam district came an enquiry regarding the attendance of the public at meetings of the Council. The Deputy Chairman, Mrs. D. N. Rathbone, who officiated in the absence of a Chairman following the recent death of Alderman A. C. Warwick, welcomed the suggestion that members of the public desired to attend. It was, she said, something of a compliment and must be encouraged. The only possible difficulty was accommodation. Opinions varied on the latter point, members envisaging the attendance of 100, 30, and 'only one or two' members of the public. The question was deferred for further discussion.

As a result of a letter received from the Hon. Secretary of the Lenham Women's Institute (Kent), relating to the desirability for installation of safety taps on cooking stoves, the Council discussed the matter at some length. In answer to a request from the Council for information on this subject, the Commercial Manager of the Board had explained that the provision of a master tap was not general practice since it often constituted an additional hazard; a burner being turned on while the master tap was turned off and, when the latter was turned on, gas escaping unnoticed from the unignited burner. The use of such a device had been discontinued as the result of a fatality.

Members of the Council commented on the provision of adequate safety taps on certain gas fires and the possible employment of the safety cock by the gas meter. While agreeing with Board that the provision of a master tap was not the answer to the problem, the Council agreed that this question (a 'hardy annual' with Women's Institutes, said the Chairman) was an important one and requested that the Board be asked to make a special investigation into possible means of overcoming the danger.

Mixed Post Bag

Other items of correspondence under discussion included the following: A letter from a consumer through the Greenwich district, applying for the refund of deposit held by the Board as security for payment of accounts; another through the Metropolitan district relating to charges for clearance of service; another from the Secretary of the Caterers' Association relating to the Board's terms for catering discounts, etc.; another from the Town Clerk, Chatham, relating to lack of representation on the Council of the Medway towns, Rochester, Chatham, and Gillingham; another via the Sanderstead district concerning rationing regulations as applied to the use of domestic coke in place of coal. Letters from the Board included a reply from the Secretary regarding quality of coal supplied to the Board for carbonisation, and notification regarding calorific values for the Cranbrook district.

During the meeting copies of posters and leaflets publicising the work of the Council were circulated for examination and approval. Referring to Press publicity, the Chairman expressed her satisfaction with the fact that references to the Council had occurred in 36 publications, including four national periodicals; she commented briefly on the publication of derogatory remarks in the *Kent & Sussex Courier*.

Right of Entry

The following recommendation by the Kent County Committee was considered:

'That notwithstanding any legal right to enter forcibly a consumer's premises, the Gas Board be requested to ensure in future such right be only exercised—

(a) in cases of emergency;
(b) after suitable notice, where entry is necessary in connection with a supply to the premises or to adjoining premises.

'Cases of emergency to mean cases where gas is escaping, or it is suspected that gas is escaping, or where it is necessary to turn off gas owing to fire or suspected fire.

'Suitable notice to mean notice by registered letter giving 14 days clear notice of intention to enter, and of which a copy shall be sent to the police authority for the district in which the premises concerned are situated.'

The recommendation was agreed to be 'clear and reasonable,' and the only alteration made was 'cases of emergency to mean cases *such as those* where gas is escaping. . . .' It was felt, however, that the Council was in ignorance of the original phrasing of the existing 'right of entry,' and the matter was deferred pending further information.

Nationalisation in Scotland

FINANCIAL ASPECTS and IMPLICATIONS

By

JAMES G. DAVIDSON,
M.A., B.Comm., Ph.D., F.I.M.T.A.

Chief Financial Officer,

Scottish Gas Board.

In this paper, presented at the 90th annual meeting of the North British Association of Gas Managers, Ayr, September 6, 1951, the author reviews the progress which has been made in the establishment of a stable financial structure in Scotland since vesting date. Acknowledging the loyal co-operation of engineers, managers, and secretaries throughout Scotland he assures them of the utmost co-operation on the part of the financial administration and declares that their object should be to stand together with singleness of authority and purpose to further the best interests of consumers and the industry.

THE nationalisation of the gas industry was made effective as from May 1, 1949, by the Gas Act, 1948, and through the various regulations which the Minister is empowered to make under that Act. A list of these regulations which, *inter alia,* affect Scotland is given in Appendix I, and this might prove useful for reference, particularly if brought up to date from time to time.

The powers and duties of area boards are given in the Gas Act. After nearly two and a half years of nationalisation, it is hardly necessary for me to stress various important clauses in the Act, which, in the opinion of many experienced in the drafting of legislation, is a particularly good Act. The charter of the gas industry is, however, contained in the first section, and would furnish ample material for a very attractive company prospectus. Far from being cribbed, cabined, and confined by bureaucratic control, the area boards have been accorded very great scope in running their business to the best advantage, within the confines of a national plan.

Just as in the flotation of a company the prospectus should be made wide enough to embrace any future development, so in clause 1 of the Gas Act we have wide scope not only to develop and maintain an efficient, co-ordinated, and economical supply of gas and by-products, but also to carry on such activities as may be advantageous or convenient thereto, and to do anything calculated to facilitate the exercise or performance of any of our functions.

The Constitution, powers, and duties of the Gas Council are adequately outlined in the Council's first report. One of the Gas Council's main functions is to promote and co-ordinate the performances of area boards, and to act as an advisory channel for the Minister of Fuel and Power. It is true that the Gas Council has certain statutory duties of its own in relation to research, finance, and borrowing, and industrial relations, but the normal running of the industry is the concern of area boards.

Transfer Problems

Apart from the financial provisions contained in Part III of the Gas Act, 1948, there are one or two important clauses outside this part to which I should like to draw your attention. Before doing so, however, I would remind you that the Scottish Gas Board had the responsibility of taking over 194 undertakings, comprising:—

64 former local authority undertakings,
4 statutory company undertakings,
2 ancillary company undertakings,
4 privately-owned,
120 non statutory company undertakings.

The basis of transfer varied from the compulsory transfer to that of willing buyer and willing seller, and even at this date all the negotiations resulting from this transfer have not been concluded. Broadly, however, the arrangements were that the Board should assume liability for all the proper obligations of the vested undertakings, and should at the same time acquire all the property and rights thereof, subject to two important provisions:—

(a) Liabilities in respect of 'securities' were to be discharged in the first instance by the Minister of Fuel and Power through the issue of gas stock. The definition of 'securities' contained in section 74 was therefore of some importance, and meant that careful determination had to be made of those liabilities which had to be settled by way of gas stock from those which were redeemable by cash. Had the price of gas stock remained at par, the matter might have been of less importance to the holders.

(b) The Board would only be responsible for servicing local authority loans, in respect of outstanding debt on the gas undertaking as and when interest and sinking fund charges would, but for the Act, have fallen due.

Apart from complications regarding ancillary and holding companies and the separation of accounts of gas undertakings from other local authority accounts, and the disclaimer of any disallowable transactions, the transfer was a straightforward one, and only the facts as per audited accounts had to be determined.

The compensation given to holders of securities by way of gas stock was determined by the Minister under the provisions of section 25 of the Act. In the transition period we acted as agents for the Gas Council in dealing with the first payment of dividends on gas stock, and also in some of the detailed arrangements with stockholders' representatives. The compensation given to local authorities amounted to the relief from further liability for outstanding debt on the gas undertaking, together with a sum of some £2¼ mill., of which the Scottish share was £559,000, as compensation for severance. Some doubt appears to exist, even in the minds of local authorities, as to the meaning of 'compensation for severance.' It should be explained that local authorities ran a number of trading activities in addition to their normal services. As the administrative machinery was common to and available for all departments, there was some justification for a lump-sum payment of compensation, because it is not always possible immediately to readjust administrative expenses to actual needs. The main compensation to local authorities consists of relief from future discharge of outstanding debt.

I do not propose to go into the many details and difficulties of the take-over because these are non-recurring, but I should just like to say that from local authorities, company secretaries, auditors, and the many contacts it was necessary to make, the utmost co-operation and advice were received. This augurs well for the service which it is our duty to continue.

Financial Provisions

Let me now deal with the financial provisions of the Gas Act. Fortunately for us, these are clear and unmistakable and not too numerous. I propose to restate them in plain words, which is always a risk where there is an abundance of 'provided thats.'

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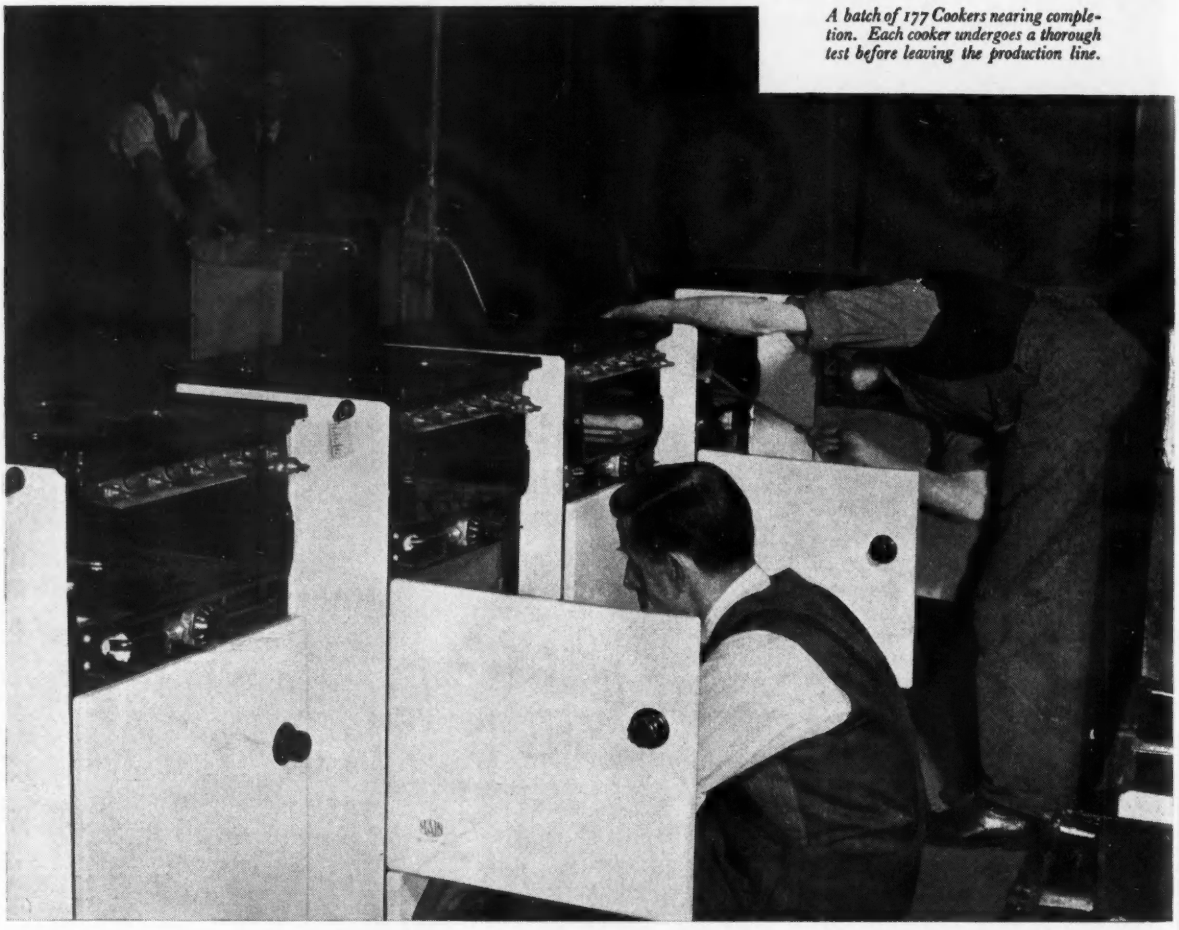

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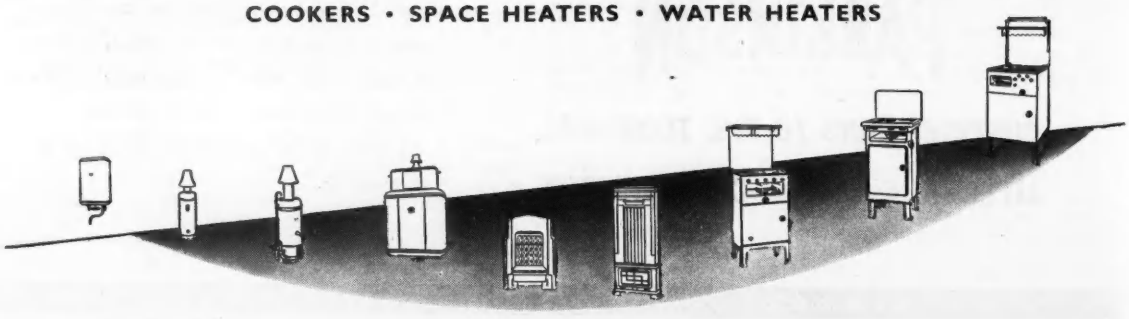

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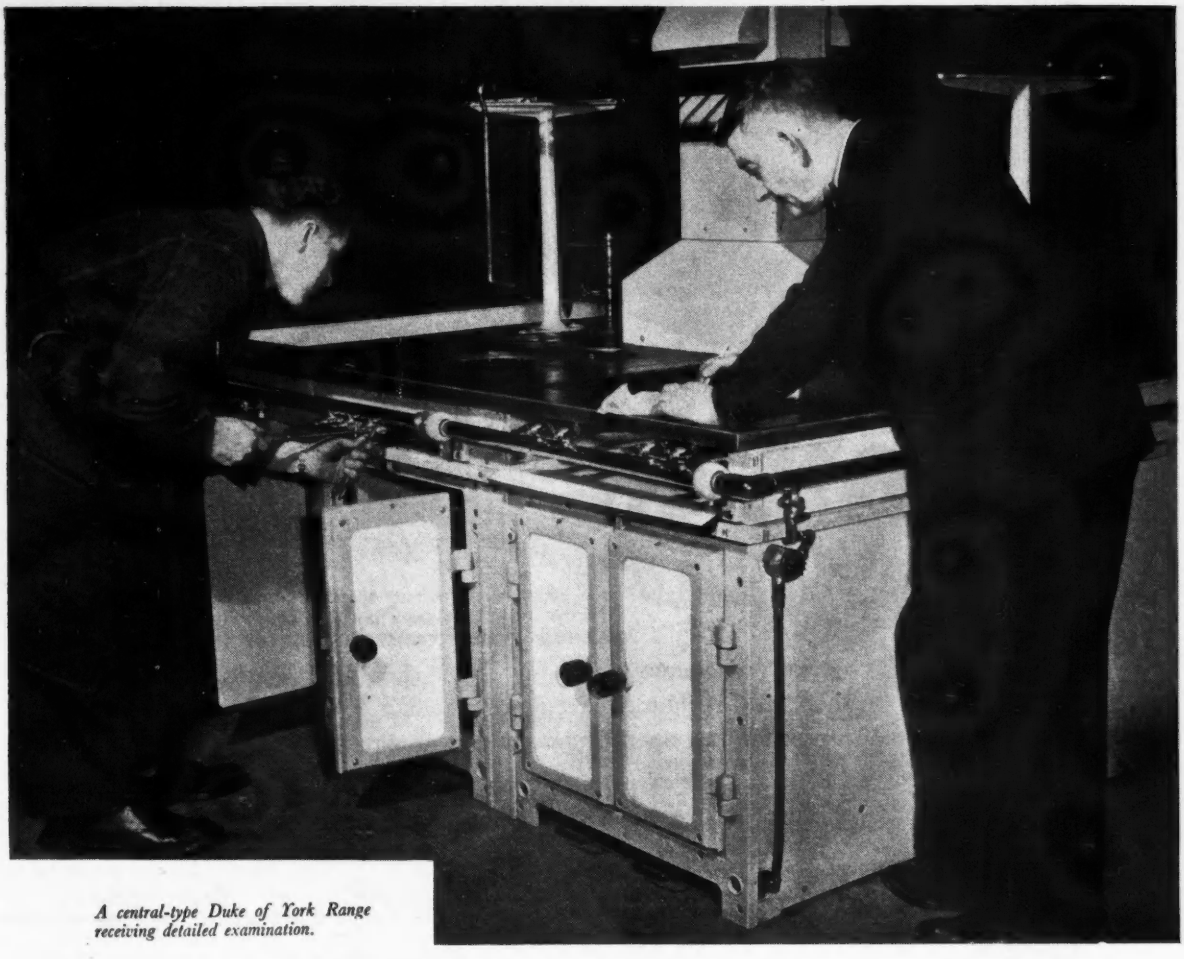

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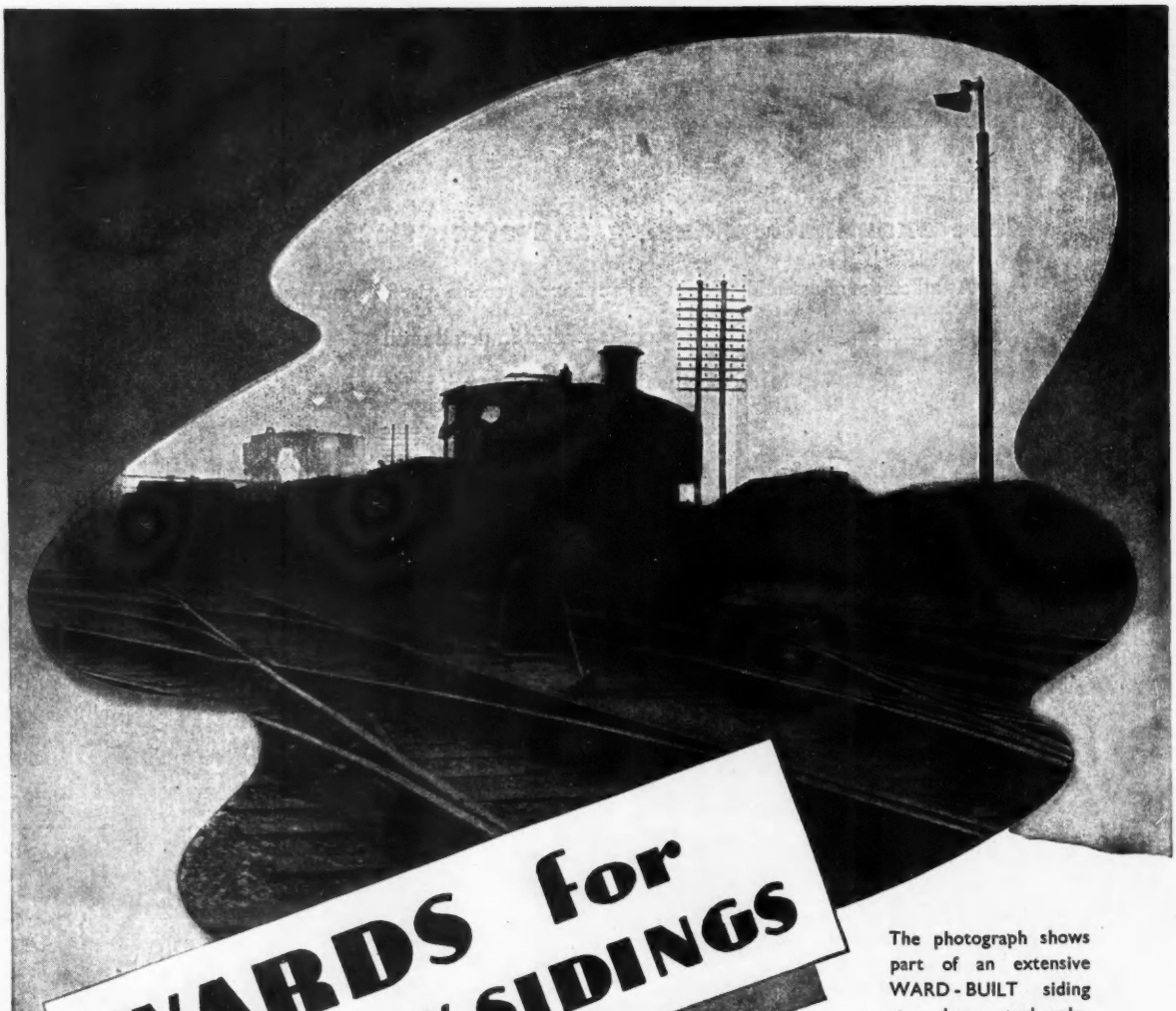

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(a) The industry must pay its way. That is to say that one year with another, and having regard to expenditure *properly chargeable to revenue* and to proper provisions for depreciation and for redemption of capital, the income earned must be adequate. (Section 41 (1)).

(b) All temporary borrowing must be done with the consent of the Minister and the approval of the Treasury. (Section 42 (1)).

(c) All borrowing other than temporary (*e.g.*, capital expenditure) must be done through the Gas Council with the consent of the Minister and the approval of the Treasury. (Section 42 (2)).

(d) The industry must function on the basis of estimates of capital and revenue income and expenditure. (Sections 41 (2) and 44 (1)).

(e) Annual accounts prepared in a form prescribed by the Minister are to show the financial and operating results of each main activity, be audited by the Minister's appointee, and be sent to the Minister, laid before Parliament, and be made available to the public.

Items Chargeable to Revenue

I think you will agree with me that the financial provisions cannot be regarded as either unreasonable or meticulously detailed. They do, however, provide for an ordered method of financing, and it is significant to note that in section 49 are elaborated particular items which are 'properly chargeable to revenue account,' *viz.*:—

(a) proper allocation to the Central Guarantee Fund.

(b) proper allocation to any reserve fund.

(c) proper provisions for redemption of capital.

(d) proper provisions for depreciation of assets or renewal of assets.

(e) proper provisions for local authority sinking funds or other loans.

I have purposely specified these statutory obligations because I have the impression that, in some of your minds at least, there may be a suspicion that financial officers generally are apt to tuck away the hard-earned profits of the manager into some elusive fund which is as good as lost to the industry. This is very far from the truth. I know of no field of economic activity in which there is less latitude as to what may legitimately be done than in the realm of finance. Indeed, financial officers might find themselves in some difficulty if they pleaded the orders of their Board for doing anything contrary to that authorised by Act of Parliament.

The problem of how your hard-earned profits are dissipated by the addition of an allocation of Board's expenses may also be in your minds. Let me say at the outset that the term 'Board's expenses' is a rather unfortunate one, and merely means the items of expense which are carried in the Board's head office account so that groups and divisions need not be troubled with numerous allocations in detail. A more appropriate title which has been suggested for such expenses is that of 'Centralised Expenses to be Allocated.'

The main items, in round figures (which, I may add, are still provision for 1950/51) included in this general heading are:—

1.	Contributions to Gas Council	£33,000
*2.	Board expenses proper	84,000
3.	Insurances	3,300
4.	Contributions to Central Guarantee Fund ...	21,200
5.	Depreciation on balance of compensation ...	4,700
6.	Amortisation of Gas Stock (unallocated) ...	43,000
7.	Deficiency of Rothesay (pre-vesting)	4,500
8.	Deficiency on Superannuation Fund	20,000
†9.	Balance of Board's expenses charged in published accounts but not recovered from undertakings in 1949/50 (non recurring)	62,000
		£275,700

* Salaries and expenses of members and staff; expenses of Consultative Council; auditors' fees; bank charges; printing and stationery; legal expenses; subscriptions and donations.

† Contributions to superannuation fund, depreciation of intangibles, financing expenses, gas stock, etc.

The fair allocation of these centralised expenses created some difficulty in the minds of the Board, but it was decided that, having regard to the mixed bag, the most equitable method was to share out on the basis of gas sold.

Personally, I would like to go further in taking into the Board's account other items which might be shared out in this way, but that is a matter of policy and it is not my purpose to get involved in matters which it is the prerogative of the Board to decide. I think, however, that in the near future some decision will have to be made regarding the continual bringing forward of persistent deficits, which have a snowball effect of still further enhancing the deficits of unremunerative undertakings through the increasing interest charges. It must also be borne in mind that whatever the domestic arrangements may be, the Scottish Gas Board is required to present only one account, *viz.*, the Board's Account.

Another rather popular delusion is that since nationalisation, financial officers have somehow invented considerable increases in debt charges. It is indeed true that few, if any, industries have ever been required by statute to provide for depreciation *and* for the redemption of their capital. It is true that, until the Central Guarantee Fund has reached the statutory limit of £5,000,000 for all boards taken together, area boards may experience difficulties in making any considerable contribution to an area reserve fund. It is equally true that while the compensation gas stock awarded overall may be favourable to the industry, nevertheless there may be cases where the particular award to certain holders of securities appears to be considerably in excess of what one might loosely term 'market value.' The indisputable facts remain, that the new financial obligations are statutory and must, under existing legislation, be provided.

It should perhaps be explained here that the Central Guarantee Fund (referred to in section 46 of the Gas Act) has been established by the Gas Council for the purpose of ensuring the prompt discharge of specified financial obligations of the Council and of area boards.

Income

Let us now look at the statutory provisions as affecting the income of the industry, again restated in plain words:—

(a) Gas of a standard pressure, purity, and uniformity must be sold according to the number of therms supplied within at least five years at publicly declared rates, the form of tariff being at the discretion of area boards according to the different classes of cases. There are special provisions for a stand-by supply.

(b) Special agreements are permissible in special circumstances.

(c) No undue preference or discrimination must be shown, and supply cannot be refused within 25 yd. of a distributing main (50 yd. for public lamps).

(d) Only meters stamped by the Minister's examiners must be used, and the register of such meters shall be *prima facie* evidence of gas supplied.

(e) The cost of service pipes in excess of 30 ft. is payable by owner or occupier.

(f) A limitation of price in the resale of gas is made by the area board.

(g) Debts not exceeding £20 are recoverable summarily as a cash debt, and there is power to cut off supply in case of default. Security deposits (on which interest is payable every six months on sums of 10s. or over) are exigible.

(h) At least 24 hours' notice of removal is required from consumers.

(i) Prescribed particulars must be shown on every demand note.

It should be noted that there is nothing in the Gas Act to regulate the income from by-products or appliances, although in the case of by-products generally there are agreements which have effect throughout the Industry.

Organisation

Perhaps I have now dealt with the general set-up of nationalisation sufficiently to enable me to outline the working of the Board within a statutory scaffolding.

The Scottish Gas Board has been set up with a relatively small staff, on the basic principle that over-centralisation is neither practicable nor desirable. The Board was faced with the problem of whether their organisation was to be based on area or function. As in all essentially British institutions, a compromise was evolved. For general administration the advantages of area organisation are obvious, particularly where distances are so considerable, but a measure of functional responsibility for law, finance, and technical affairs should prove economical. There is no reason why a compromise of the kind established for the fighting forces should not prove equally adequate in the economic field, provided there is the utmost co-operation and goodwill. Fortunately, we can all contribute to co-operation and goodwill. It will be appreciated, for example, that a measure of independence is necessary and desirable on the part of internal auditors, who are, as it were, the 'free lance' watch dogs of the finance department.

Under nationalisation, the careful control of the finance of a public authority assumes a much greater importance than under private enterprise where the profit motive operates to curb extravagance. It is felt in many quarters—and Parliament is one of them—that more and more importance attaches to the domestic arrangement under nationalisation than to reliance on the more remote Public Accounts Committee, Parliamentary questions, and Ministerial investigations. We must, as early as practicable, get into the position of being able to satisfy the Government and public that our management and control are adequate, effective, local, and sufficiently detailed, if we are to continue relatively free from external, day-to-day controls.

In a recent paper, Sir Edgar Sylvester, Chairman of the Gas Council, referred to the set-up of such international concerns as I.C.I. and Lever Brothers, and indicated the similar flexible co-ordination of area executive activity with functional responsibility for technical, commercial, and financial administration so well exemplified in local authority structure as a natural evolution always, in Sir Edgar's own words, subject to a process of self-examination.

The initial concept that each separate undertaking should, financially at least, stand on its own feet, has of necessity had to be modified by the pressure of circumstances, but in all matters of this kind organisation is a process, not a result; and no doubt time will witness a measure of mergers, consolidations, or even regionalisation in production. As far as the further consolidation of financial resources is concerned, there need not be the same physical difficulties. Be that as it may, it must be borne in mind that each area board is required to lay before the Minister only one account, irrespective of how that account may be sectionalised for other reasons.

Banking and Borrowing

One of the earliest problems with which we were faced at vesting date was that of setting up banking arrangements to cover the whole of Scotland. Through the willing co-operation of the Joint Stock Banks this was undertaken with the minimum of delay, and I am happy to record that there was no delay in putting the various officers in funds for the due payment of wages and other outlays. It may here be emphasised that the fundamental principle has been applied throughout, that revenue paid to the Board must be banked intact and not used for the purposes of expenditure. This may appear to some of you to be a somewhat cumbersome procedure, but I can assure you that in practice it avoids a mass of complications which otherwise might baffle the most expert of auditors. Where the ordinary revenues of any Board are insufficient for immediate needs, recourse is had to temporary borrowing from the Gas Council, and that body is now in a position to make first use of the surplus funds, for the time being, of certain other area boards. This should have the effect of restricting the amount of external borrowing and give a remunerative outlet for boards with short-term money to lend. Powers to borrow temporarily are given in section 42 (1).

With the rapid development of capital expenditure by the boards, the problem of long-term borrowing also arises. Reference may be made to section 42 (3) of the Gas Act, which authorised the issue by the Gas Council of gas stock up to a limit of £250 mill. over and above that issued by way of compensation. Thus, apart from the use of internal funds, there is adequate long-term financial provision for the capital development of the industry meantime.

I had the impression that shortly after vesting date, many of the former undertakings which had not been subject to local authority rule rather disfavoured the idea of being required to formulate forward estimates of any kind, and particularly in regard to capital requirements, but I may say that the statutory requirements of Section 44 are such that capital estimates are unavoidable. I am deeply conscious that planning can be overdone, but I am equally persuaded that the planning of capital expenditure is a *sine qua non* of ordered development, and that all proposals for capital expenditure should always be examined at a high level where the wood and not the trees can be visualised. With the advent of priorities necessitated by the re-armament programme that is more than ever necessary.

Form of Accounts

Perhaps the most important financial matter which had to have the attention of the Board was that of determining the form of accounts for the undertakings vesting. It was realised that some time would elapse before a standard form for all area boards could be agreed. The Scottish Gas Board took the reasonable step, having regard to the variety of forms of accounts in use in Scotland, of standardising throughput their area an interim form to enable accounts and estimates to be prepared on a uniform basis. By a system of codification the various account headings could be referred to in an abbreviated form. The interim form of accounts was based on the best form found in Scotland and worked reasonably well for the first year. It was inevitable that considerable recoding was necessitated by the subsequent national agreement for a standard form for all area boards, and this caused us all great difficulties, delays, and disputes. Even at this late day there are criticisms of our form of accounts, some well-founded, some ill-advised. It will, however, be my endeavour to limit changes to the utmost, because any changes mar comparison one year with another. The mysterious numbers shown on the accounts and estimates need not trouble you a great deal, but these are of the greatest value to my department in tabulating results by mechanical methods. The Minister of Fuel and Power has since made the Area Boards (Accounts) Direction, 1950, a copy of which was printed and published in our accounts for the period ended March 31, 1950, and this direction specifies the various accounts and schedules with which all area boards must comply.

The next pressing problem after vesting was that of assessing our financial position, in order that the provisions of the Gas Act might be applied in balancing our budget. This was an extremely difficult task, for many reasons. In the first place, many of the liabilities emerging for the first time were unknown—e.g., registrars' fees, management of gas stock, and a number of other new features. In the second place, our first period of accounts was not to be a complete year, to which we had grown so accustomed, and many charges mainly appropriate to the period actually fell due outside the period of the accounts. Furthermore, not all the vesting undertakings had been brought up in the local authority tradition of estimating in advance, and it was readily apparent that with rapidly rising prices and many pre-vesting trading losses, the Board would be faced with a trading loss of considerable dimensions if some increase in the price of gas was unduly delayed. Accordingly, the trading position of each undertaking was examined in con-

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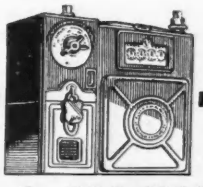

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siderable detail in the light of the new circumstances, and temporary adjustments were made in charges so that, one year with another, income should meet expenditure properly chargeable to revenue. Even with this action taken, the time-lag in recovering any increase in revenue meant that a deficit on the first period's trading was unavoidable.

Tariffs

It has not been possible so far to arrive at anything like a pseudo-scientific tariff basis or regional tariffs of any kind, and in present circumstances it appears doubtful whether promotional tariffs are likely to be in harmony with present-day national economic circumstances and policy. I would, however, like to take this opportunity of emphasising the rather inadequate information available to the Board of kinds, classifications, and consumpts on which any sound policy should be determined. Questionnaires are not any more popular with headquarters than they are with you, but as opportunity offers I am quite sure it would be helpful if some sample undertakings could, at their leisure, analyse their consumptions into suitable blocks, so that tariffs could be determined with reference to the various model quantities of the districts. A realistic determination of what the prepayment differential should be seems also a matter which calls for factual study.

Many of you, with your pre-vesting knowledge of the accounts of former undertakings, may have had some misgivings regarding the treatment in the Board's accounts of reserve funds built up in years gone by. This matter was fully discussed and an agreement was reached as to the proper treatment of these reserves. Broadly, it was that capital and general reserves should be applied to the reduction of intangible assets and the balance of compensation, while specific reserves should be carried forward in the Board's accounts for utilisation for the purpose for which they had been created.

It does not necessarily follow from this that they thereby become earmarked to the locality, although this may be taken into consideration by the Board in any claim for a contribution therefrom. The extent and the occasion for the utilisation of the balance on the deferred repairs account is a matter at the discretion of the Board.

Criticisms

Anyone engaged in public administration is all the better for being up in the clouds now and then, and giving his vision some exercise. But it is equally important that he should have his ear to the ground, and welcome and be sensitive to criticism. I may be wrong, but I feel that criticism of the financial administration may take two forms— *viz.*: (1) that sufficient information is not made available to the man on the spot; and (2) that much of the meticulous detail required in the accounts is quite out of place when applied to the smaller works.

It is perhaps unfair of me to borrow the arrows out of your quiver, but I do so deliberately for the reason that it may afford you the opportunity of adding something to the discussion.

To the first criticism I think I should plead guilty, because for the first year the financial results were so belated that much of their value was of academic interest only. We have, however, attempted to give divisional controllers and group managers an analytical survey of the first year's results, more with a view to ascertaining what would be helpful to them in the future than with a view to indicating that this is all they can get. Our hope is that for 1951/52, quarterly results will be provided as the year progresses. Our ultimate aim might even be monthly results.

On the second criticism I have an entirely open mind, but the matter was put to me some time ago by the Deputy Chairman, and discussed by the group accountants, as to whether a simplified form of analysis of expenditure and income might not suffice for undertakings under a certain size. The suggestion was, however, not favoured by the accounting staff on the grounds that:—

(a) Different analyses for different sized undertakings would vitiate the pulling together of the accounts.

(b) Endless difficulties would be experienced in reconciling different treatment of expenditure and income.

(c) The form of accounts standardised for all undertakings can be used by the smallest undertakings, leaving blank the headings which do not affect them.

(d) A standard coding must be used for all accounts which ultimately have to be pulled together.

(e) The form of accounts as presently drawn up obviates the need for the superimposition of any detailed costing system.

I may add for your information that the details involved in our accounts are not in any way excessive compared with those required by other area boards which I have studied. It may also be pointed out that as Chief Financial Officer I have to serve two masters— *viz.*: you who want to know the working efficiency of your plants, and the Board, who are liable to ask for the make-up of any omnibus figures which appear in the published accounts.

The first public issue of the Report and Accounts of the Gas Council and of all area boards received on the whole a favourable criticism, apart from comment on the lateness of publication. But even on this score it was admitted that the task of producing a common policy in matters of accounting principle necessitated considerable delay. The following quotations from *Local Government Finance* may be of interest:—

(a) A wealth of statistics is to be found in this well-written report.

(b) Over-centralisation has been deliberately avoided.

(c) The increase in personnel since vesting date does not appear unduly large.

(d) Over half the country's coal output is used by the nationalised gas, electricity, transport, and steel industries.

(e) The extent to which prices can or should be brought to a common level throughout an era is a matter of long-term policy.

(f) Readers will no doubt envy the freedom of action enjoyed by the boards.

(g) It is inevitable that the decision to depreciate on historical costs should fail to satisfy economic thought.

(h) It remains to be seen whether the gas industry will follow the electricity practice of providing fully for the depreciation of fixed assets, and out of this provision providing for stock redemption and the repayment of local authority loans.'

These quotations are put before you for the purpose of emphasising that enlightened public opinion is alert to the important position we, as an industry, occupy in the national economy and, although fair and sympathetic, is not averse to publicising any of our weaknesses.

Conclusion

Within the compass of a short dissertation I have endeavoured to give you some idea of the financial aspects and implications of the nationalisation of the gas industry. We, as employees, have been entrusted with the great responsibility of proving that we are worthy of a trust. The mere fact that the public enjoys a considerable measure of protection against fraud or discrimination does not relieve us in any way. The manner in which the many and complicated vesting problems have been tackled augurs well, in my view, for the future prosperity of the industry, and if, in the few succeeding years, we can maintain a flexible, understanding, helpful, and sympathetic attitude to all the problems with which we are faced, and give due consideration to all the major problems of policy in the light of national circumstances and needs, we may look forward with confidence to building up a creditable public service even in the face of all economic difficulties.

I am conscious of the many aspects and implications of nationalisation with which I have not dealt, particularly in

relation to such things as statistics, costing, valuation, income tax, the amalgamation of accounts, and the termination of agencies. The extent to which mechanisation can be, and is being, applied in the field of accountancy is perhaps another matter on which you might have wished me to dwell, but there are limits to your endurance which I have no desire to stretch. If I have succeeded in provoking a discussion, my purpose has been served.

Mr. Herbert Morrison spoke some time ago on the subject of a new orientation of outlook needful to make nationalisation a success, and appealed for more give and less take. I feel that, on purely financial grounds, there is much justification for this appeal. Nationalisation of the gas industry has taken place during a spiral of rising prices and, with the inherent time-lag for the recovering of appropriate revenues, there is little prospect of our getting the industry back to a self-balancing position unless managers responsible for technical and administrative efficiency give ungrudgingly of their best skill. We, in the accounting sphere, will do our best to devise the least expensive and most effective technique of finance and statistics so that the competitive position of our fuel and service may be maintained and improved without any loss of that team spirit without which success can never be enduring. It is true that such a great change in organisation cannot be made synchro-mesh, but we can all do our bit to ensure that there is the oil of harmony to minimise the noise and disturbance of such a change of gear. We have moved a long way from the middle ages, when propinquity between employer and employed was the characteristic, when the professional organisation, the trade association and the trade union were all embodied in the one guild, and where any pulling in different directions occurred, it could be readily recognised and obviated. We may be titularly designated, have different points of view, and be called on to operate in different fields, and in so operating we may, with the utmost sincerity, be occasionally at cross purposes.

Our object should be to stand together with singleness of authority and purpose to further the best interests of our consumers and of our industry, and I appreciate this opportunity of assuring you of the utmost co-operation on the part of the financial administration to this end.

APPENDIX I.

List of Statutory Instruments affecting Finance (Scotland)

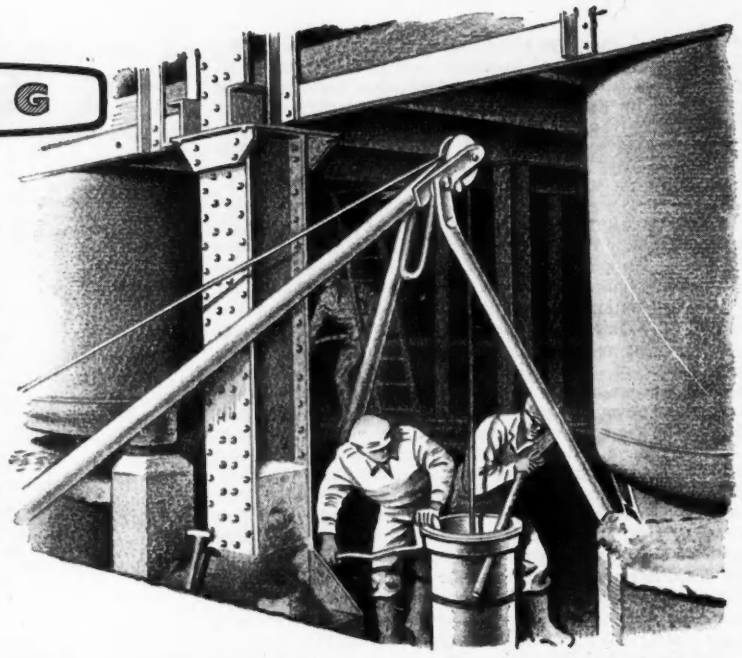
S.I. No.	Year	Reference to Section of Gas Act (unless otherwise specified)	Subject Matter
2233	1948	5	Terms of appointment of members of area boards and procedure of meetings.
2242	,,	16	Service of notice on undertakings to be vested.
2645	,,	5	Period of appointment of members of area boards. See also 2233/48.
2709	,,	27	Appointment of stockholders' representatives.
2773	,,	6	Map of areas of area boards.
392	1949	17	Fixing vesting date as May 1, 1949.
398	,,	26	Claim for increases in security values due to war causes. Time limit six months.
568	,,	38 and 39	Foreign investments of former undertakings. General obligation to produce books and documents.
580	,,	Railways Valuation for Rating Act, 1930, Section 22.	Adjusting date for Valuation Roll to May 5.
742	,,	17	Allocation of undertakings to area boards. NOTE: Leslie includes Birnam and Dunkeld; Thurso includes Golspie; Vale of Leven includes Inveraray—Total 193.
743	,,	74	Determining the financial year as ending on March 31.
750	,,	2nd Schedule	Security values determined before vesting date. U.K. Gas Corporation, Ltd.
751	1949	43	Gas Stock Regulations dealing with issue, transfer and redemption.
787	,,	9	Consultative Council regulations.
788	,,	53	Declaration of calorific values.
789	,,	55	Gas testing regulations.
790	,,	54	Gas meter regulations.
791	,,	Defence Regulations, 1939.	Revoking Gas (Maximum and Standard Prices) Order, Gas Charges Order, 1947, Gas Charges Order, 1948.
792	,,	55	Gas Quality Regulations.
812	,,	2nd Schedule.	Security values determined before vesting date—Armadale, Auchtermuchty, Inverurie, Kelty.
815	,,	17, 18, 22, 30 and 31.	Vesting of assets of transferred undertakings.
846	,,	Gas Regulations Act, 1920, Section 10.	Kirkcaldy Gas Order. Acquisition of Skeddoway site.
1360	,,	2nd Schedule.	Conversion date for shares—St. Andrews.
1418	,,	18	Vesting of Assets amending Regulations, extending time limit from 31st July, 1949, to 31st December, 1949. See principal regulation, 815/1949.
2053	,,	Statistics of Trade Act, 1947, Section 2.	Obligation to make returns of statistics of trade.
2113	,,	2nd Schedule.	Conversion date for shares—Alyth, Annan, Beith, Blairgowrie, Brechin, Busby, Coupar Angus, Dunblane, Fauldhouse, Galston, Girvan, Irvine, Kilmacolm, Kinross, Kirriemuir, Montrose, Muirkirk, Newburgh, Strathmiglo, Vale of Leven, West Calder.
2157	,,	54	Maximum fees for examination of any meter.
2228	,,	2nd Schedule.	Conversion date for shares—Bathgate Linlithgow, Saltcoats, Stevenston, Stewarton, Wick.
2289	,,	60 and 62	Compensation for loss or diminution of employment.
2329	,,	2nd Schedule.	Conversion date for shares—Auchinleck, Auchtermuchty, Ayr, Banff, Buckie, Coatbridge, Cullen, Cumnock, Forres, Hawick, Kelso, Kennoway, Kinghorn, Lochwinnoch, Nairn, Polmont, Stonehaven.
2380	,,	Defence Regulations, 1939, Section 55.	Revocation of Control and Price Regulations.
2387	,,	Coal distribution Order, 1943, Section 6.	Limiting amount of coals to 40 cwt.
2453	,,	Finance Act, 1948, Section 21.	Purchase tax reduced to 62½% on thermal storage water heaters (electric). Exemption for instantaneous water heaters (Calor gas).
10	1950	2nd Schedule.	Conversion date for shares—Biggar, Carluke, Castle Douglas, Cupar, Dalbeattie, Galashiels, Huntly, Jedburgh, Keith, Kettle, Langholm, Laurencekirk, Lochgelly, Markinch, Melrose, Moffat, Turriff, Wigtown.
85	,,	2nd Schedule.	Conversion date for shares—Duns, Earlston, Innerleithen, Newton-on-Ayr.
172	,,	2nd Schedule.	Conversion date for shares—Barrhead, Eyemouth, Inverurie, Kilwinning, Pitlochry.
310	,,	2nd Schedule.	Conversion date for shares—Ayton, Banchory, Bo'ness, Catrine, Coldstream, Lerwick, Lesmahagow, Maybole, Oban, Selkirk, Stirling.
407	,,	2nd Schedule.	Conversion date for shares—Auchterarder, Bridge of Weir, Dalry, Dunlop, Dunning, Kelty, New Cumnock, Neilston, Newton Stewart.
684	,,	2nd Schedule.	Conversion date for shares—Cardenden, Dollar, Inverkeithing, Kirkconnel, Skelmorlie, Stornaway, Stranraer.
687	,,	3rd Schedule.	Rate of interest on deposits 3½% per annum.
897	,,	Coal Distribution Order 1138/1943.	Licensing for coal etc. distribution.
933	,,	2nd Schedule.	Conversion date for shares—Kinghorn, Musselburgh.
1277	,,	29	Gas Severance Compensation. Formula for determination of amounts.
—	,,	50	Area Boards (Accounts) Direction prescribing the form of accounts of Boards.
1525	,,	2nd Schedule.	Conversion date for shares—Musselburgh, West Kilbride.
17	1951	2nd Schedule.	Conversion date for shares—Aberlady and Gullane, Cowdenbeath, Dalkeith, Gorebridge, Haddington, Hawick, Loanhead, Penicuik.
160	,,	2nd Schedule.	Conversion date for shares—Crieff.

A new series of handbooks under the general title of 'Notes on Applied Science' is being prepared by the National Physical Laboratory. No. 1 of the series, *Gauging and Measuring Screw Threads*, has just been published for the Department of Scientific and Industrial Research by H.M. Stationery Office at 5s. (post 4d.). From experience gained in testing large numbers of screw gauges during the first world war the Metrology Division of the N.P.L. published a pamphlet to assist firms who were unfamiliar with the accuracy required in the manufacture and testing of those gauges, and the new handbook is the result of a comprehensive revision of several successive editions of those notes. It contains the most up to date material available and includes information relating to the unified screw thread system and to the measurement and gauging of tapered threads. Of the nine appendices, one gives a table of symbols agreed at the 1945 Ottawa Conference on the unification of engineering standards; another gives particulars of standard screw threads, and the final appendix covers a wide bibliography. There are seven plates and 62 line drawings in the text.

PILING

The Cementation Company, Ltd., have the resources and the experience to undertake piling work for Hammer Foundations, Factory Extensions, Machinery Bases, Underpinning, Bridges and any similar purpose in any part of the world.

—And the skill to complete the work quickly and inexpensively even where headroom and working space are limited and freedom from harmful vibration is essential.



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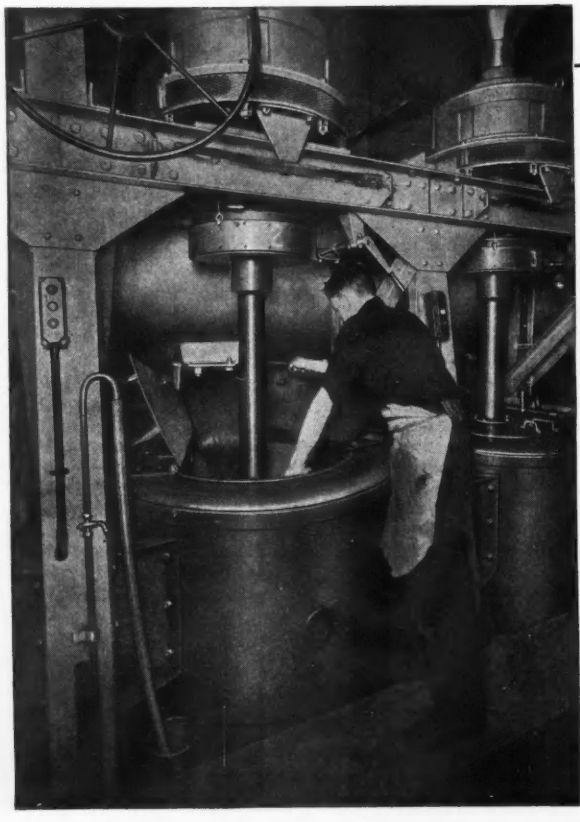

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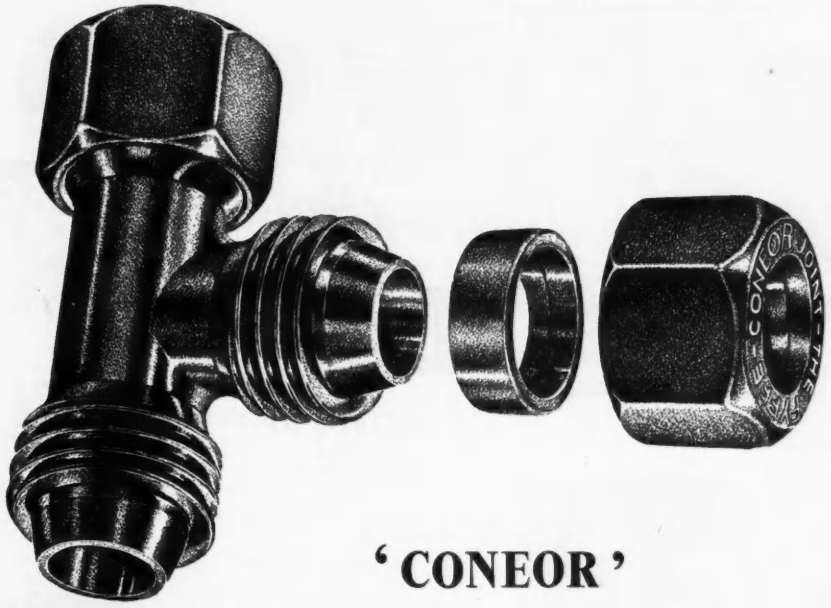
for speed and efficiency



The popular 'manipulative' fitting — especially with tube to BSS 1386/659.

There are no loose cones, except in straight couplings.

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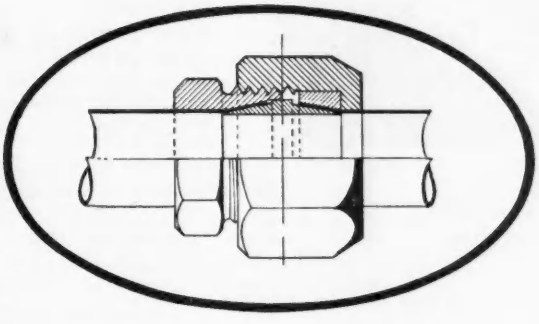
"Coneor" accommodates two gauges of tube.



All parts are accurate and interchangeable.

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Fyffe's manufacture a complete range of compression and capillary fittings in the "D.D.", "Coneor", "Instantor" and "Intex P.T." patterns.

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F15

INDUSTRIAL RUBBER HOSE

CENTRAL MANFG., & TRADING CO. (DUDLEY) LTD.
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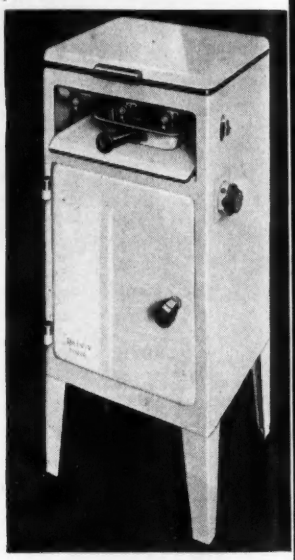
PHONE: CRADLEY HEATH 69181 (5 LINES).
"EVERYTHING IN ASBESTOS."

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.
See our Advertisement Next Week.
REAVELL & CO. LTD. IPSWICH.

CRANE
LTD

For small Kitchens and Flats...

The **Dainty** MINOR



This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast-iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire. The 'Dainty' Minor is ideal.

Approved and adopted by leading gas boards.

Leaflets fully describing this efficient, attractive and economical cooker will gladly be sent.

R. RUSSELL & SONS LTD., DERBY

Agents for Scotland and Northern Ireland :
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Foliac
GRAPHITE PRODUCTS LTD.
LONDON, S.W.11.

GAS RETORTS
HARRIS & PEARSON LTD
STOURBRIDGE. ENGLAND
INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C
Manufacturers of
Fire Bricks, Lumps & Tiles
OF EVERY DESCRIPTION

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/-; by post 1/2d.

Subscription Rates : Home and Empire :- 52/- per annum ; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calender & Directory is presented each year to continuous subscribers.

Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements : Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide ; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS OFFICE : 10, Union Street, Birmingham.

NORTHERN MANAGER : W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone : Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone : CENtral 2236-7. Telegrams : Gasking, Fleet, London.

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DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON
Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.
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Telegrams: ...rification, Stock, London." Telephone: London Wall 5077

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THE COOKER CLEANER
...s for Sale to Consumers. In Bulk for Works Use

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WHERE'S YOUR
NU-SWIFT?
The World's Fastest Fire Extinguishers — for every Fire Risk
Pressure-operated by sealed CO_2 Charges
NU-SWIFT LTD. • ELLAND • YORKS
In Every Ship of the Royal Navy

REPAIRS
FOR PUBLIC LIGHTING
CLOCK CONTROLLER REPAIRS.
(A.I.D. approved)
BRIGHT, SON & CO.
(CLERKENWELL) LTD.
SUTTON WORKS, ARLINGTON AVENUE, ISLINGTON, N.1
Canonbury 2049 Brifulson, Nordo, London.

APPOINTMENTS VACANT

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP.

APPLICATIONS are invited from suitably qualified persons for the post of Transport Officer to the North Cheshire Group of Undertakings.

Applicants should have received a regular training in transport management and also possess considerable experience in an executive capacity in a large road transport organisation. Engineering experience and a professional qualification in engineering and/or transport would be considered an advantage.

The salary will be within Grade A.P.T. XII of the National Salary Scales (£695-£820 per annum) in accordance with experience.

The successful applicant may be required to pass a medical examination and subscribe to such superannuation scheme as the Board may adopt.

Applications, giving personal details, particulars of training, qualifications and experience, together with the names and addresses of two referees, should be addressed to the General Manager, North Western Gas Board (North Cheshire Group), Portwood Gas Works, Stockport, so as to be received within 14 days of the publication of this advertisement. Envelopes should be endorsed "Transport Officer, North Cheshire Group."

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP.

APPLICATIONS are invited from suitably qualified persons for the following positions:—

DEPUTY STATION ENGINEER—
MACCLESFIELD WORKS.

Applicants should possess the Higher Grade Certificate (Gas Manufacture) of the Institution of Gas Engineers and have received a thorough training in all branches of gas manufacture. Experience of continuous vertical retorts is essential.

The successful applicant will be responsible to the Station Engineer for the control of all works activities and personnel.

The commencing salary will be within Grade A.P.T. IX of the National Salary Scales (£570-£670 per annum) according to experience and qualifications.

GROUP CHIEF CHEMIST.

Applicants should be Associates of the Royal Institute of Chemistry or possess a Chemistry degree of a British University and have a broad experience in gasworks or allied fuel industries.

The successful applicant will be responsible to the Group Production Engineer for the supervision of the chemical control of gas manufacture, purification and by-product plant and for the work of the chemical staff throughout the Group.

The commencing salary will be within Grade A.P.T. XII of the National Salary Scales (£695-£820 per annum) according to experience and qualifications.

The successful candidates may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Applications giving full particulars of training, qualifications and experience, together with the names and addresses of two referees, should reach the General Manager, North Western Gas Board (North Cheshire Group), Gasworks, Portwood, Stockport, not later than fourteen days after the publication of this advertisement.

ROBERT DEMPSTER & SONS LTD., Elland, Yorks., have a vacancy for a SENIOR DRAUGHTSMAN for proposal and contract work, preferably with experience in Gasholders and Purification Plant. Permanent and progressive post. Pension Scheme.

EAST MIDLANDS GAS BOARD

GRIMSBY.

APPOINTMENT OF DRAUGHTSMAN.

APPLICATIONS are invited for the post of DRAUGHTSMAN at the Grimsby Undertaking. Applicants with a general knowledge of constructional steel work will be preferred.

The appointment will be made within the national scale A.P.T. VI (£455-£535). The post is superannuable and the successful candidate may be required to undergo a medical examination.

Applications stating age, experience, qualifications, present salary and position, together with the names of two referees should be addressed to F. Harvey Esq., Group Manager, East Midlands Gas Board, Sheepfold Street, Grimsby, to be received not later than September 17, 1951.

B. CLARKE,
Divisional General Manager.

Lincoln.

MINISTRY OF FUEL AND POWER

EXAMINER (MALE).

THE CIVIL SERVICE COMMISSIONERS invite applications for two permanent appointments in the Gas Standards Branch.

Candidates must be at least 25 years of age on August 1, 1951. They must possess a University degree in either physics or chemistry. Some post graduate research experience would be an advantage.

Salary scale £475-£750. Starting pay is linked to age 25 with addition of £25 for each complete year of age above 25, subject to a maximum of £600.

This salary scale is at present under review.

Further particulars and application forms from the Civil Service Commission, Scientific Branch, Trinidad House, Old Burlington Street, London, W.1, quoting No. S.4073/51. Completed application forms must be returned by October 18, 1951.

12808/120/MLB.

SOUTH EASTERN GAS BOARD

WEST SURREY DIVISION.

ASSISTANT MECHANICAL ENGINEER,
WANDSWORTH WORKS.

APPLICATIONS are invited for the position of ASSISTANT MECHANICAL ENGINEER at the Wandsworth Works of the Board.

Applicants should preferably have obtained Corporate Membership of the Institution of Mechanical Engineers. They should also have a sound theoretical knowledge and practical experience of mechanical and power plant and have had workshops experience in a supervisory capacity.

The salary will be in accordance with qualifications and experience and will be within Grade X of the National Salary Scales (Metropolitan Area) in respect of Administrative, Professional and Technical Staffs (£650-£750 per annum).

Applications in writing (quoting reference V10/186) giving age, present occupation, training, experience and qualifications, etc., should reach the undersigned not later than fourteen days after the publication of this notice.

R. J. McCRAE,
Personnel Manager.

Katharine Street,
Croydon.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

METERS LIMITED, controlling J. & J. Braddock, George Orme & Company and Sawer & Purves, gas meter manufacturers and engineers, by reason of impending retirements will shortly be considering the re-organisation of their Sales Department and the appointment of additional representatives. Applications are invited from gentlemen of outstanding ability and personality and, whilst a knowledge of the gas industry would be an added advantage, it is not considered essential. The appointments carry attractive remuneration and conditions of service. Applications, which will be treated in strictest confidence, should give details of age and career to date, and should be addressed to the Chairman, Meters Limited, 51, King Street, Manchester, 2, and endorsed "Sales."

WALES GAS BOARD

RHYL GROUP.

GAS ENGINEERING DRAUGHTSMAN.

A VACANCY exists for a GAS ENGINEERING DRAUGHTSMAN at the Rhyl Gas Undertaking.

Applicants should have a sound theoretical and practical knowledge in the design and layout of Gas Works Plant and Buildings, and Distribution Systems. Service with either a Gas Undertaking or Gas Plant Contractor will be an advantage.

The successful candidate will be required to pass a medical examination and to subscribe to such scheme of Superannuation as the Board may adopt.

The salary will be in accordance with Grade VI of the Board's Scale of Salaries (£455-£535).

Application, giving personal details, particulars of training, qualifications and experience, and the names of two Referees, should be posted to: O. P. Cronshaw, Rhyl Group Chairman, 93, Wellington Road, Rhyl, Flintshire, not later than October 1, 1951.

WALES GAS BOARD

SWANSEA UNDERTAKING.

APPOINTMENT of:—

SALES & SERVICE SUPERINTENDENT.

ASSISTANT DISTRIBUTION SUPERINTENDENT.

Applications from suitably qualified persons are invited for the above-mentioned posts.

SALES & SERVICE SUPERINTENDENT.—

Candidates should have good experience and be competent to organise and control sales of appliances and general service to consumers.

Experience in the control of Showrooms, and in the use of gas for industrial purposes will be an advantage, as also the possession of the Institution of Gas Engineers Certificate in Gas Salesmanship and Consumer Service.

The salary will be in accordance with Grade VII of the National Scale £500 to £580 with placing according to qualifications and experience.

ASSISTANT DISTRIBUTION SUPERINTENDENT.—

Candidates must be qualified Distribution Engineers possessing recognised technical qualifications. Preference will be given to candidates possessing the Institution of Gas Engineers Higher Grade Certificate (Gas Supply) or equivalent technical qualifications.

Experience in the planning of development schemes will be an advantage.

The salary will be in accordance with Grade VI of the National Scale £455 to £535 with placing according to qualifications and experience.

Successful candidates will be required to pass a medical examination and to subscribe to such Superannuation Scheme as may be adopted by the Board.

Applications, stating age, qualifications and experience, together with the names of two referees, should be received by the undersigned not later than September 29, 1951.

ERNEST ABLETT,
Engineer, Manager & Secretary.

Gas Offices,
Oystermouth Road,
Swansea.

NEWTON CHAMBERS & COMPANY have a vacancy for a SENIOR CONTRACTS ENGINEER in the Gasworks Plant Section of their Heavy Constructional Division. Applicants should be experienced in the handling of large contracts involving fabricated steel, cast iron work, site erection, foundations, subcontracting, etc. This is an attractive permanent position, offering wide scope. Applications in writing giving full details of age, experience and present salary should be addressed to the Personnel Officer, envelope marked "Contracts Engineer."

NEWTON CHAMBERS & COMPANY invite applications for the post of SENIOR SALES ENGINEER in the Gasworks Plant Section of their Heavy Constructional Division. The successful applicant will be responsible for design, and for the preparation and submission of tenders; previous Drawing Office and estimating experience is essential. The post is permanent and superannuable and offers considerable scope. Applications in writing giving full details of age, experience and present salary should be addressed to the Personnel Officer, envelope marked "Sales Engineer."

EASTERN GAS BOARD

WATFORD DIVISION.

INDUSTRIAL GAS ENGINEER.

APPLICATIONS are invited for the position of INDUSTRIAL GAS ENGINEER for the Northern Section of the Watford Division. Applicants should have had considerable experience in the design, construction and installation of industrial and commercial plant covering a range of widely representative industries, and should be suitably qualified by examination.

The salary scale will be within the range, Grade IX A.P.T. ('Fringe' Metropolitan) £590-£690 per annum, according to experience. The successful candidate would be required to pass a medical examination.

Applications stating age and giving full particulars of education, training, qualifications and experience, should be sent not later than September 24 to the General Manager, Eastern Gas Board, Watford Division, Radiant House, Clarendon Road, Watford, Herts.

EASTERN GAS BOARD

CAMBRIDGE DIVISION.

BEDFORD DISTRICT.

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT at Bedford Gas Works.

Candidates should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers and should have experience in the control of vertical retort installations and ancillary plant.

The salary for this position will be in accordance with A.P.T. Grade V, Provincial 'A' of the National Salary Scales for the Gas Industry, and the commencing salary will be in accordance with the qualifications of the person appointed.

The successful applicant will be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may adopt.

Applications endorsed "Technical Assistant," and stating age, present position and details of training, qualifications and experience, together with the names of two referees should reach the undersigned not later than twelve days after the publication of this advertisement.

K. B. MEGGITT,
Group Engineer and Manager.

Eastern Gas Board
(Cambridge Division),
Bedford District,
Ford End Road,
Bedford.

PATENTS

KINGS PATENT AGENCY, LTD
(Director, B. T. King, A.I.M.E., Patent Agent)
Advice Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. Phone: City 6161.

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CONNELL OF COATBRIDGE

OFFER THE FOLLOWING BOILERS FOR IMMEDIATE DISPOSAL.

ECONOMIC TYPE

Babcock & Wilcox Marine type, water tube Boiler, 22,000 lb., evaporation; 250 lb., working pressure. Oil fired and complete with burner equipment, oil and water pump, fuel storage tanks, etc. The boiler is self contained, requires no building in and can be moved or shipped in one piece. Very suitable for land installation. Practically new.

One—Wet back Economic type Boiler, 13ft. 6in. dia. × 10ft. 6in. long × 180 lb., working pressure. Thru furnace.

One—Paxman, twin flue economic type Boiler, 12ft. 6in. × 7ft. 0in. × 100 lb., working pressure with Meldrum patent firegrate.

VERTICAL

One—Blake, multitubular—17ft. 9in. × 7ft. 6in. × 160 lb., working pressure.

One—Nelvin, oil fired, thimble tube—12ft. 4in. × 5ft. 3in. × 100 lb., working pressure.

One—Blake, multitubular—10ft. 9in. × 4ft. 6in. × 90 lb., working pressure.

One—Cochran, multitubular—10ft. 0in. × 4ft. 6in. × 100 lb., working pressure.

Four—Clarkson Thimble Tube, oil fired, Type BATO/35, 120 lb., working pressure 300 lb., evaporation

LOCO TYPE

One—12 N.H.P. 100 lb., working pressure by Robey

For full particulars apply to:

JAMES N. CONNELL LIMITED
PHOENIX & CLIFTON WORKS,
COATBRIDGE, SCOTLAND.

Telephone: Coatbridge 1121 (5 lines).

THE BRITISH GAS PURIFYING MATERIALS CO., LTD.
NATURAL BRITISH.
DUTCH BOG ORE.
SPENT OXIDE.
LONDON ROAD, LEICESTER.
Telegrams: "BRIPURIMAT"
Telephone: 59086

PUBLICATIONS

GAS ACCOUNT CALCULATORS
SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN, LTD., Calculator Specialists, 35 WHEELER STREET, BIRMINGHAM.
'Phone: Northern 0989. 'Grams: Reckoner B'ham.

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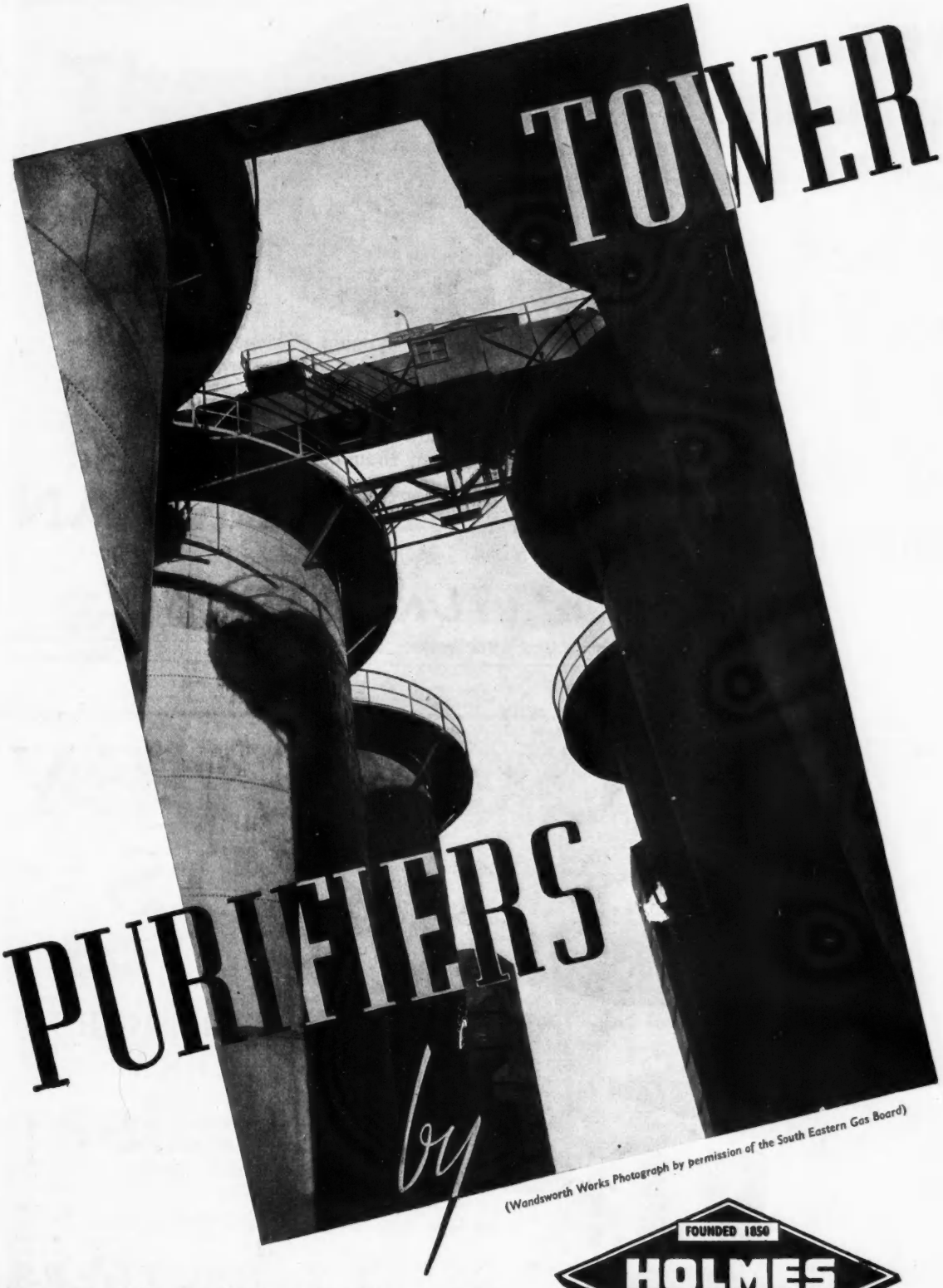

TOWER

PURIFIERS

by

(Wandsworth Works Photograph by permission of the South Eastern Gas Board)

A repeat order has been received from Wandsworth, and now nine similar installations are in hand for seven undertakings.

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HOLMES
HUDDERSFIELD
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C 265

Every gas furnace using air blast should be fitted with this control!

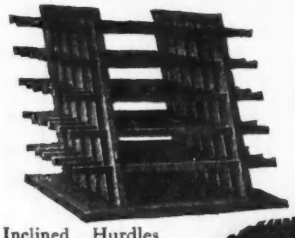
This control ensures maximum efficiency because it correctly mixes gas and air and maintains correct proportions irrespective of changes in the gas or air pressures. Also, with this control reasonable air pressure only is required, which, if not already available, can be provided by a centrifugal fan. Many thousands in use.

KEITH BLACKMAN

TYPE 2 AUTOMATIC GAS & AIR

MIXTURE CONTROL

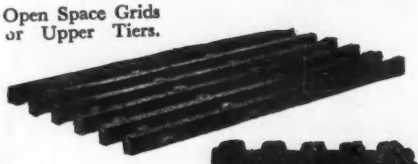
KEITH BLACKMAN LTD., MILL MEAD ROAD, LONDON, N.17. TN: TOTTENHAM 4522 TA: "KEITHBLAC NORPHONE LONDON."



Inclined Hurdles (Light or Heavy Type) with Bottom Flat Grids.

Scrubber Grids.

Open Space Grids or Upper Tiers.



Patent Double-Barred Grids.

Flat Grids for Bottom Tiers (Closed Ends).

CROSSLEY GRIDS

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PURIFIERS, SCRUBBERS AND WASHERS

Embody the latest improvements—are of the very best quality—and are in use extensively throughout the Kingdom

Send your enquiries for any kind of Grids to:—

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Telephone: BLACKPOOL 51005 (2 lines). *Telegrams:* "CROSSLEY, BISPHAM."

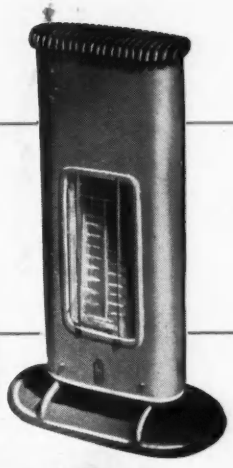
REPRESENTATIVE: Mr. W. E. Settle, 66, Bridgewater Road, Bradford, Yorks.

Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4. Wednesday, September 12, 1951

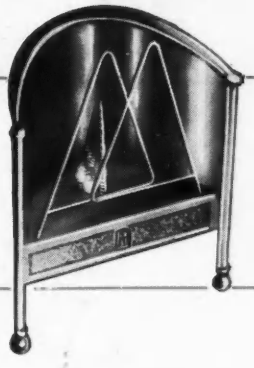
These gas fires are easy to sell

NEAT

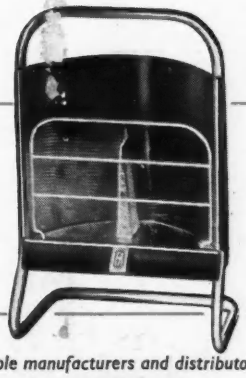
F. A. Neat gas fires incorporate Neat gas jets. They are silent, safe and cannot light back, yet give perfect combustion with exceptional heat output for gas consumed. All are made of fine quality materials by the makers of the famous Ascot gas water heaters and to the same high standards. They can easily be carried from room to room.



CONVECTOR FIRE, FA/7.
An attractive background heater, fitted with four Neat burners which heat a pair of fire-clay radiants. Ideal for halls or landings. Finished in cream, heat-resisting enamel with chromium plated top.



'MIJ' PORTABLE GAS FIRE, FA/8.
Has an unbreakable chrome steel radiant and three Neat burners. Finished in heavy chromium plate and processed aluminium. Suitable for small rooms or localised heating.

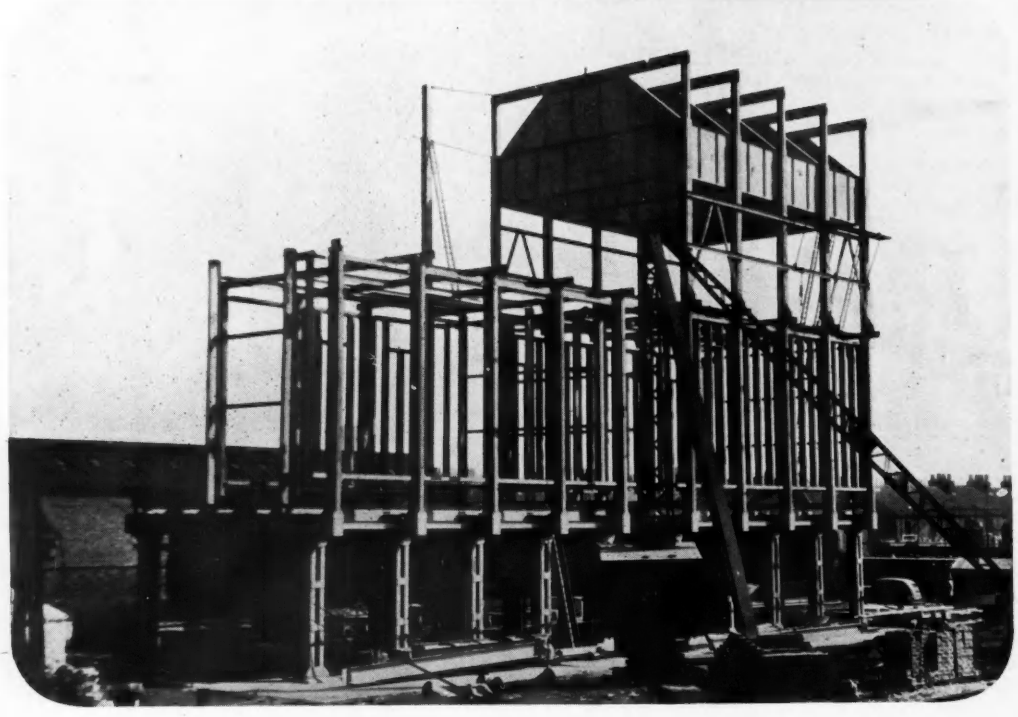


PORTABLE GAS FIRE, FA/3.
Also has an unbreakable chrome steel radiant of high efficiency. The reflector is chromium plate on heavy brass and the remainder of the heater cream enamel. Ideal for the medium sized room.

Sole manufacturers and distributors

ASCOT GAS WATER HEATERS LTD. ASCOT 43 PARK STREET · LONDON · WI · GRO 4491

Work in progress



STOCKTON-on-TEES

Retort Benches under construction for the installation of 64, 50 inch Glover-West Vertical Retorts.

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